Two Essays On Screening Strategies

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TWO ESSAYS ON SCREENING STRATEGIES

by

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ABSTRACT

Consumers form consideration sets by screening from all available alternatives. Consumers typically utilize one of two types of screening strategies: an exclusion screening strategy wherein alternatives not worthy of further consideration are rejected or an inclusion strategy wherein worthy alternatives are selected for further evaluation. Extant literature has documented the important role played by screening strategies in decision making. However, there is very limited understanding of when and why consumers may employ one screening strategy over the other as well the impact of the screening strategy for decision accuracy. This dissertation attempts to study the antecedent and consequence of screening strategies. Essay 1 in this dissertation, investigates the role of consumers' perceived uncertainty on the choice of screening strategy. Four studies in this essay show that when consumers are highly uncertain they are more likely to choose exclusion screening strategy; whereas when they are less uncertain they are more likely to use inclusion screening. Mediation analyses in Studies 1 and 2 show that the choice of screening strategy is primarily driven by perceived accuracy of the strategy. Study 3 demonstrates that the effect of uncertainty on the choice of screening strategy is moderated by consideration set size. When uncertain consumers form smaller sets they are more likely to use exclusion screening, but this relationship flips when they form larger consideration sets. Finally, external validity for the relationship between uncertainty and choice of screening strategy is demonstrated in Study 4 using the popular TV game show *Who Wants to be a Millionaire?*

Essay two in this dissertation, investigates the role of perceived uncertainty and consideration set size on the relationship between screening strategy and objective accuracy of

the decision. Utilizing an experimental study with an actual choice task, I demonstrate that perceived uncertainty moderates the screening strategy-decision accuracy relationship. Further, this interactive relationship is contingent on consideration set sizes. Whereas consumers with high perceived uncertainty make higher quality decisions with inclusion while forming smaller consideration sets, their decision quality is higher with exclusion when forming larger sets. Likewise, while consumers with low perceived uncertainty make more accurate decisions with exclusion when forming smaller sets, the accuracy of their decisions increases with inclusion when forming larger sets.

This dissertation contributes to literature on screening strategies by explicating perceived uncertainty as a critical factor that leads to consumers preferring one screening strategy versus the other. Furthermore, it adds to our understanding of an important consequence of using screening strategies – decision accuracy.

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CHAPTER ONE: INTRODUCTION

1.1: Dissertation Overview

This dissertation aims to study the antecedents and consequences of using screening strategies in decision making. The dissertation consists of two essays that seek to answer the following questions: (1) Given that consumers face uncertainty while making decisions in a variety of contexts, what role does perceived uncertainty play in the choice of screening strategy? (2) Does the choice of screening strategy influence the objective accuracy of decisions, especially given that consumers may experience varying levels of uncertainty during decision making? This dissertation contributes to literature on screening strategies by explicating perceived uncertainty as a critical factor that leads to consumers preferring one screening strategy versus the other. Furthermore, it adds to our understanding of an important consequence of using screening strategies. This research adds to the existing body of research in screening strategies that has established that the two screening strategies are fundamentally different from each other, but yet limited research has investigated the antecedents and consequences of choosing one strategy versus the other. This dissertation attempts to fill the void by investigating the research questions mentioned above. The first essay uses a set of three internally valid experimental studies and one externally valid data from a TV game show to demonstrate the theoretical relationships. The second essay analyses data from an experimental study in an actual choice context to show support to the theorized relationships.

This dissertation is organized as follows. Chapter 1 reviews the literature on screening strategies and provides a brief overview of the two essays that follow. Chapter

2 investigates an antecedent of screening strategies and Chapter 3 examines the consequence of screening strategies.

1.2: Screening Strategies Overview

When consumers choose from a number of available alternatives they typically form a smaller subset of alternatives called the consideration set from which they make the final choice (Bettman 1979; Nedungadi 1990; Beach 1990). The process of narrowing down the number of alternatives that will be finally evaluated is called screening (Beach 1993) and is utilized by consumers because they typically lack the resources or ability to evaluate the plethora of alternatives available to them (Bettman 1979; Nedungadi 1990; Olshavsky 1979; Payne 1976; Payne, Bettman, and Johnson 1993). Screening also reduces the chances of making a bad choice (Beach 1990; Beach and Mitchell 1987, 1990) by allowing consumers to consider more information about each option and thus make better quality decisions (Alba et al. 1997; Lynch and Ariely 2000; Roberts & Nedungadi 1995). The mere act of screening influences the nature of final choice (Chakravarti, Janiszewski, and Ulkumen 2006) and hence is not merely a stage in the decision process but important in its own right (Potter and Beach 1994).

Published literature has documented the existence of two types of screening strategies employed by consumers to form consideration sets: an exclusion strategy wherein alternatives not worthy of further consideration are eliminated and an inclusion strategy wherein worthy alternatives are included into the consideration set (e.g. Yaniv and Schul 1997, 2000). With inclusion, consumers have to decide whether each alternative should be seriously considered for the final choice. On the other hand, with

exclusion consumers have to decide for each alternative, whether that alternative should be dropped from further consideration (Heller, Levin, and Goransson 2002). At the outset it may be appear that the alternatives that are not eliminated will be included in the consideration set and hence the two screening strategies are complementary processes. However, these two screening strategies differ systematically from each other. First, the underlying psychological processes of the two screening strategies are different such that for inclusion strategy, the implied status-quo is no option and inclusion of each alternative in to the set requires good evidence. The status-quo for exclusion process consists of the full set and eliminating an alternative requires good evidence (Levin, Prosansky, Heller, and Brunick 2001; Yaniv and Schul 1997, 2000). Second, consumers use different cut-offs while using the two screening strategies (Yaniv and Schul 1997, 2000). Third, sets created by using exclusion are systematically larger than those created by inclusion (Levin, Jasper, and Forbes 1998; Levin, Huneke, and Jasper 2000; Yaniv and Schul 1997, 2000). Thus, the two screening strategies differ systematically from each other in terms of the underlying psychological processes, the criteria employed, and potential outcomes (Yaniv and Schul 1997, 2000).

Extant literature has pointed to the important role that screening strategies play in decision making (Beach 1990, 1993; Payne, Bettman, and Johnson 1993). The type of screening strategy employed influences the size and composition of consideration sets (Levin, Huneke, and Jasper 2000; Yaniv and Schul 1997, 2000) as well as the final choice and purchase likelihood (Chakravarti, Janiszewski, and Ulkumen 2006; Levin, Schreiber, Lauriola, and Gaeth 2002; Park, Jun, and MacInnis 2000). Thus, the type of screening strategy employed may have far reaching consequences for the consumer and

merits further understanding of this phenomenon. This dissertation aims to provide insights to the phenomenon of screening by understanding when and why consumers prefer to use one screening strategy versus the other as well as the consequences of using the screening strategies.

1.3: Essay 1 Overview

Consumers form a smaller subset of all available alternatives using one of two screening strategies: an inclusion strategy or an exclusion screening strategy (Yaniv and Schul 1997; 2000). Extant literature has predominantly focused on the outcomes of using the screening strategies. For example, it has been demonstrated that the choice of screening strategy has an impact on the characteristics of the consideration set (Yaniv and Schul 1997; 2000) as well as final choice (Park, Jun, and MacInnis 2000; Shafir 1993). Yet, there is very limited understanding of the factors that influence the choice of one screening strategy versus the other. Ordonez, Benson, and Beach (1999), for instance, suggest that consumers employ exclusion strategy as the normal screening strategy. However, recent research has pointed out that perceived difficulty of the task (Heller, Levin, and Gorannson 2002) and valence of the task (Levin et al. 2001) impacts which screening strategy is preferred by consumers. In this essay, I investigate (1) whether perceived uncertainty influences the choice of one screening strategy versus the other, (2) what underlying mechanism drives the perceived uncertainty – screening strategy relationship?, and (3) whether the relationship between perceived uncertainty and screening strategy depends on the varying number of alternatives considered in the consideration set.

Consumers commonly experience feelings of uncertainty during decision making (Hansen 1976; Kahn and Sarin 1988) and perceived uncertainty has been shown to influence the choice of decision heuristic (Tversky and Kahneman 1974), assignment of attribute weights (Kahn and Meyer 1991), and information search strategies (Jacoby, Jaccard, Currim, Kuss, Ansari, and Troutman 1994). In this essay, I argue that perceived uncertainty impacts the choice of screening strategy such that under conditions of high perceived uncertainty consumers will favor exclusion screening strategy, whereas under conditions of low perceived uncertainty, inclusion screening strategy will be preferred. I draw upon literature from consumer learning and probabilistic reasoning to explain this theoretical relationship.

I conduct a series of 4 studies to test the relationship between perceived uncertainty and screening strategy. In Study 1, I use a within-subject experiment to show that highly uncertain consumers are more likely to use exclusion screening strategy. In Study 2, I replicate this finding using a between-subjects experiment in another product category. Further, Studies 1 and 2 also demonstrate that the choice of screening strategy is driven by perceived accuracy of screening strategies. In Study 3, I show that the relationship between perceived uncertainty and screening strategy flips when consumers form larger consideration sets (as opposed to smaller ones). Finally, in Study 4, I use data from a popular TV game show "Who Wants to be a Millionaire?" to confirm the relationship between perceived uncertainty and screening strategy in an externally valid decision-making setting.

1.4: Essay 2 Overview

The objective of essay one was to investigate the impact of screening strategy on the choice of screening strategy. The focus of essay two is to understand the consequence of using the screening strategy for objective decision accuracy. This is an important research question, given that: (1) an important motivation to employ screening strategies is to improve the quality of choice (Beach 1990, 1993; Beach and Mitchell 1990), and (2) there is little consensus on the outcome of screening strategy use, especially on the objective accuracy of the final choice. Understanding the quality of final choice is not only important because screening is supposed to improve decision quality but also because numerous consumer decisions are rife with uncertainty and in such situations, the screening strategy chosen by the consumer should improve the decision accuracy as compared to the other strategy. In other words, use of a wrong screening strategy may potentially lead consumers to make suboptimal choices.

Literature on consumer information search in decision making (Payne, Bettman, and Johnson 1993) provides the theoretical rationale for this essay. A more intense search associated with the using inclusion screening strategy (Levin, Huneke, and Jasper 2000) while helping consumers with high perceived uncertainty develop their preferences as they go through the decision process, hurts consumers with low perceived uncertainty by diluting their initial preferences. Thus, I argue that highly uncertain consumers make more objectively accurate decisions using inclusion strategy, whereas those with low perceived uncertainty are better off using exclusion screening strategy. Furthermore, I argue that this interactive effect of perceived uncertainty and screening strategy on

objective decision accuracy flips when consumers form larger consideration sets (as opposed to smaller sets).

I test the theoretical predictions in an experimental study that employs an actual decision making task. The study requires participants to screen from multiple available alternatives and then choose one alternative. Results support the prediction of a three-way interactive relationship between perceived uncertainty, screening strategy and consideration set size on the objective accuracy of decision.

In sum, this dissertation adds to existing body of literature in screening strategies by explication an important factor that impacts the choice of one screening strategy over the other. Also, it extends our current understanding regarding the consequence of using one screening strategy versus the other.

CHAPTER TWO: INCLUSION VERSUS EXCUSION: THE EFFECT OF PERCEIVED UNCERTAINTY ON SCREENING STRATEGIES

2.1: Abstract

Consumers form consideration sets by screening from all available alternatives. Consumers typically utilize two types of screening strategies to form consideration sets: an exclusion screening strategy, or an inclusion screening strategy. This paper investigates the role of consumers' perceived uncertainty on the choice of screening strategy. Two studies in this paper show that when consumers are highly uncertain they are more likely to choose exclusion screening strategy; whereas when they are less uncertain they are more likely to use inclusion screening. Further, the choice of screening strategy is primarily driven by the perceived decision accuracy. The third experimental study shows that the effect of uncertainty on the choice of screening strategy is moderated by consideration set size. When uncertain consumers form smaller sets they are more likely to use exclusion screening, but this relationship flips when they form larger consideration sets. Finally, external validity for the relationship between uncertainty and choice of screening strategy is demonstrated using the popular TV game show *Who Wants to be a Millionaire?*

2.2: Introduction

Consumers narrow down the number of alternatives they consider for final choice by screening from all available alternatives (Beach 1990, 1993; Bettman 1979; Nedungadi 1990). Published literature has documented the existence of two types of screening strategies employed by consumers to form consideration sets: an exclusion strategy wherein alternatives not worthy of further consideration are eliminated and an inclusion strategy wherein worthy alternatives are included into the consideration set (e.g. Yaniv and Schul 1997; 2000). Despite the understanding that the two screening strategies differ systematically from each other in terms of the underlying psychological processes, the criteria employed, and potential outcomes (Yaniv and Schul 1997, 2000), there is relatively little understanding of the factors that influence the type of screening strategy employed.

Ordonez, Benson, and Beach (1999) suggest that consumers employ exclusion strategy as the normal screening process, however, other studies have implied that this may not be the case. For example, when there is no single correct answer for the problem, when the task is not perceived as difficult (Heller, Levin, and Goransson 2002), and the task is positive (e.g. hiring an employee) (Levin et al. 2001), decision makers are more likely to choose inclusion screening strategy. The implicit assumption underlying all these studies, however, is that consumers are certain about the nature and outcomes of the available options, the evaluative criteria, and individual preferences. Yet, these may not always be the case. Consumers frequently experience uncertainty while making decisions. Research shows that such uncertainties arise from not knowing the potential outcomes of the options, the individual's preferences, or the attributes and decision rules that are relevant in the choice task (Urbany, Dickson, and Wilkie 1989). I propose that such perceived uncertainty will influence the choice of screening strategy. Based on the

literatures on consumer learning (Alba and Hutchinson 1987; Johnson and Russo 1984) and probabilistic reasoning (Tversky and Kahneman 1974), I argue that uncertain consumers are more likely to use exclusion screening strategy because they anticipate making more accurate decisions by using exclusion. Specifically, use of exclusion screening strategy allows uncertain consumers to consider the full set of options and also more chances to learn. Uncertain consumers also perceive exclusion screening strategy as receiving more evidence of being the most typical course of action and hence a more accurate strategy. Finally, uncertain consumers' choice of screening strategy can be altered by the size of the consideration set through altering both the learning opportunities and the probability of the most typical course of action.

The hypotheses are tested in three experimental and one non-experimental studies. In studies 1and 2, I show that uncertain consumers are more likely to choose exclusion screening strategy with accuracy considerations in mind. In study 3, I reverse this effect by showing that when uncertain consumers form larger consideration sets (as opposed to smaller ones) they are more likely to use inclusion screening strategy. Finally, I demonstrated in an externally valid TV game show (study 4) that when contestants were highly uncertain during the choice task they were more likely to use exclusion screening strategy.

2.3: Conceptual Framework and Hypotheses

2.3.1: Screening Strategies and Consideration Sets

Decision strategy, defined as "the process used to make a choice" (Machin 2006, p. 1), can vary from a rejection-based decision strategy to a selection based decision strategy (Shafir 1993). The difference between the two strategies lies in the focus of the decision – rejecting the

undesired options or selecting the desired options (Shafir 1993). Such rejection or selection-based decision strategies have been shown to influence both consideration set formation (e.g. Heller, Levin, and Goranaaon 2002; Yaniv and Schul 1997, 2000) and final choice (e.g. Chakravarti, Janiszewski, and Ulkumen 2006; Huber, Neale, and Northcraft 1987; Park, Jun, and Macinnis 2000; Shafir 1993). In this paper, the focus is restricted to the influence of such decision strategies used to form consideration sets, called consideration set formation strategies or screening strategies.

Consumers screen from all available alternatives and form a smaller set of alternatives they will evaluate before making the final choice (Beach 1993). Screening can be achieved by one of two ways: 1) by screening in the alternatives that meet some predetermined criteria (inclusion), or 2) by screening out the alternatives that fail to meet the predetermined criteria (exclusion) (see Yaniv and Schul 1997, 2000 for a review). With inclusion, consumers have to decide whether each alternative should be seriously considered for the final choice. On the other hand, with exclusion consumers have to decide for each alternative, whether that alternative should be dropped from further consideration (Heller, Levin, and Goransson 2002).

Extant literature has devoted considerable attention to the outcomes of using the screening strategies, i.e. the characteristics of the consideration sets (Heller, Levin and Goransson 2002; Levin, Huneke, and Jasper 2000; Levin, Prosansky, Heller, and Brunick 2001; Yaniv and Schul 1997, 2000; Yaniv, Schul, Raphaeilli-Hirch, and Maoz 2001). A robust finding is that inclusion strategy creates homogeneous smaller sets based on stringent evaluative criteria whereas exclusion strategy typically creates larger heterogeneous consideration sets (Yaniv and Schul 1997, 2000). Despite the growing body of evidence for the differential outcomes of the two screening strategies, there is relatively little understanding regarding the factors influencing

the choice of one screening strategy versus the other. Notable exceptions are the findings that suggest that when there is a single correct answer for the problem, when the task is perceived as difficult (Heller, Levin, and Goransson 2002), and the task is negative (e.g. firing an employee) (Levin et al. 2001) , decision makers are more likely to choose exclusion screening strategy. These studies implicitly assume that decision makers are certain about the nature and outcomes of the available options, the evaluative criteria, and individual preferences. Yet, these may not always be the case. Consumers may often be unsure during the choice process and such perceived uncertainty may influence the consideration set formation process, namely the choice of screening strategy.

2.3.2: Uncertainty and Screening Strategies

Consumers frequently experience uncertainty while making consumption decisions. Such uncertainties arise from not knowing the potential outcomes of the options, the individual's preferences, or the attributes and decision rules that are relevant in the choice task. Such perceived uncertainty has been shown to influence the choice of decision heuristic (Tversky and Kahneman 1974), assignment of attribute weights (Kahn and Meyer 1991), and information search strategies (Jacoby et al. 1994). Further, when consumers face uncertainty in the choice process they form consideration sets by searching for options on the uncertain attribute (e.g. price) (Mehta, Rajiv, and Srinivasan 2003) and such search and evaluation processes during consideration set formation reduces consumers' perceptions of uncertainty (Hauser and Wernerfelt 1990).Thus, it is reasonable to believe that perceived uncertainty during the consideration set formation stage will influence the choice of screening strategy. In this paper, I

propose that when consumers perceive high uncertainty in the decision process, they are more likely to use exclusion screening strategy.

The process of screening prevents bad options from being considered and as such it is primarily driven by the motivation to search and ultimately choose the best option (Beach 1990, 1993; Beach and Mitchell 1987, 1990). Thus, the choice of screening strategy should be one that helps consumers make accurate decisions. In the following discussion, I will argue that uncertain consumers are more likely to choose exclusion screening strategy because they perceive it will lead to more accurate decision than would inclusion.

Consumer Learning

The relationship between uncertainty and the choice of screening strategy is supported by two lines of reasoning. The first line of support comes from research on consumer learning (Alba and Hutchinson 1987; Johnson and Russo 1984). While screening alternatives to form consideration sets, exclusion screening strategy can be mentally represented as consisting of more number of steps or decisions. This idea comes from the notion that the consideration set is usually a small subset of all available options (Hauser and Wernerfelt 1990). Thus, while forming a small consideration set (e.g. of four alternatives) from all available alternatives (e.g. ten), use of exclusion screening strategy will involve making significantly more number of decisions (e.g. six distinct decision to exclude alternatives). Use of inclusion screening strategy on the other hand will involve making fewer decisions (e.g. four decisions to keep options for further consideration). Therefore, exclusion screening strategy affords more chances to learn and make better decisions. Such learning is especially beneficial to uncertain consumers to improve their decision making.

Literature on consumer learning is replete with examples that provide evidence of learning through repetition of the task. For example, repeated exposure to any stimuli, including advertisements and product claims, has been shown to enhance learning. Such learning has been demonstrated through recall (Zeilske 1959) and recognition of the repeated stimuli (Krugman 1972; 1977). Singh and Rothschild (1983) showed that repetition of advertisements lead to increased recognition and recall of the product category, brand name, and advertisement claim. Repetition of product claims also increases belief in the claims due to consumers' familiarity with the repeated claims, especially during low-involvement processing (Hawkins and Hoch 1992). While judging alternatives, increased familiarity facilitates consumers' ability to learn new product information through improved ability to encode and remember new information (Johnson and Russo 1984). Finally, repeating any product related task improves task performance (Alba and Hutchinson 1987). Therefore, uncertain consumers are more likely to choose exclusion strategy because use of exclusion strategy affords more opportunities to learn as compared to inclusion, thus increasing their chances of making more accurate decisions.

Probabilistic Reasoning

The second line of reasoning is provided by literature on probabilistic reasoning (Kahneman and Tversky 1982; Tversky and Kahneman 1974). Literature in decision making is replete with examples that show decision makers express their beliefs regarding the likelihood of occurrence of an uncertain event in terms of subjective probabilities (e.g. Tversky and Kahneman 1982). Kahneman and Tversky (1982) argued that uncertain decision makers commonly use simplifying heuristics like mental simulation heuristics to assess probabilities of unknown events or quantities. According to this view, decision makers create mental simulations

of the probability of the event by considering the perceived ease of achieving the event. Even when multiple mental scenarios are generated, decision makers tend to use the most plausible scenario to make probability judgment (Koehler 1994; Dougherty, Gettys, and Thomas 1997). Similar evidence has been provided by research on prediction based on uncertain categorization, where the most probable category is used to make prediction and all other categories are ignored (Lagnado and Shanks 2003; Murphy and Ross 1994; Ross and Murphy 1996). Such a reliance on the most probable category occurs due to the availability of categories in memory (Ross and Murphy 1996) and the representativeness of such categories to guide subsequent probabilistic inference (Lagnado and Shanks 2003). Further, Nisbett, Krantz, Jepson, and Kunda (1983) also argue for people's use of "intuitive, rule of thumb inferential procedures that resemble formal statistical procedures. One example of such statistical heuristics is the preference for more rather than less evidence. These studies, taken together, support the notion that uncertain consumers may use simple judgments about probability while forming consideration sets and make predictions about the quality of their decisions.

Formation of consideration set implies that the consumer will only consider a few alternatives (typically a smaller subset) of all available alternatives. Thus, the majority of alternatives will not be considered for further evaluation. Uncertain consumers will use this majority of alternatives that will not be considered as the most probable category of reference for probability judgment. The greater number of alternatives that will not be considered also indicates more evidence for the most typical course of action and may guide subsequent judgments. For example, if a consumer forms a consideration set of four alternatives from the available ten alternatives, the chance that any given alternative will not be considered is 0.6 as compared to it being considered (0.4). Exclusion, because of the higher probability may

represent the most typical and hence the most accurate course of action (Lagnado and Solomon 2004). Such probabilistic reasoning is especially beneficial to uncertain consumers to improve their decision making. Therefore, highly uncertain consumers are more likely use to use exclusion screening strategy.

In summary, evidence from these two lines of reasoning supports the proposed relationship between uncertainty and the choice of screening strategy.

H_1: *Uncertainty influences the choice of screening strategy such that; consumers with high (low) levels of uncertainty are more likely to choose exclusion (inclusion) as the preferred screening strategy to form consideration sets.*

The previous discussion regarding the two lines of reasoning for the relationship between perceived uncertainty and the choice of screening strategy suggests that consumers' perception of accuracy achieved by the use of screening strategy drives the choice of screening strategy. Specifically, the greater opportunities to learn increase the perceived accuracy that will be achieved by the use of the screening strategy. Second, probabilistic reasoning increases the perceived accuracy of the strategy by suggesting outcomes with higher probability as the most typical and hence most accurate course of action. Thus, perceived accuracy of the screening strategy drives the choice of the screening strategy. This is consistent with the notion that the process of screening prevents bad options from entering the consideration set and thus increases the opportunities to make higher quality decisions (Beach 1990, 1993; Beach and Mitchell 1987, 1990). Thus, the two lines of reasoning discussed earlier support the following hypothesis:

H_2: *Perceived accuracy of the screening strategy mediates the effect of uncertainty on the choice of screening strategy.*

2.4: Study 1

The objective of study 1 was to test whether the choice of screening strategy was sensitive to consumers' perceived uncertainty. Decision makers' perceived uncertainty may appear similar to their perception of how complex the task is to perform, (Schoemaker 2004). These two related, but distinct concepts have been demonstrated to impact forecasting (O'Connor, Remus and Griggs 1993) and thus need to be discussed here. Task complexity is a characteristic of the task at hand (Payne 1976; Payne, Bettman, and Johnson 1993) such that more complex tasks may be perceived as difficult. Whereas uncertainty is a characteristic of the individual decision maker arising from the lack of knowledge to judge the alternatives, not knowing which alternative to choose, or not knowing what decision rules are relevant (Schoemaker 1993, 2004; Urbany, Dickson, and Wilkie 1989). Thus, it is important to demonstrate the effects of uncertainty while controlling for complexity. To segregate the effects of uncertainty and task complexity on the choice of screening strategies, I manipulated both these variables in the same study. Uncertainty was manipulated by altering the knowledge and understanding of the product category and preferences (Urbany, Dickson, and Wilkie 1989) while task complexity was manipulated by varying the number of options available to choose from (Payne 1976; Payne, Bettman, and Johnson 1993). The reasoning was that increasing the uncertainty that decision makers felt during the choice task should encourage them to choose exclusion as the preferred screening strategy.

2.4.1: Method

Thirty undergraduate students were recruited for the study. Participants were given extra credit for their participation in the study. Adapting from Chakravarti and Janiszewski (2003), participants were told that they would read some shopping scenarios regarding shopping for videogames and were asked to think what the consumers would do if they were in the situation. Participants were also asked to base their responses strictly on the information provided and discount any previous experiences they may have had with the product category or specific brands. The hypotheses were tested using a 2 (uncertainty: high or low) x 2 (task complexity: high or low) x 4 (order of presentation) mixed design experiment. Here uncertainty and task complexity were within-subject factors and order of presentation was a between-subjects factor.

In this study participants were told about four hypothetical consumers who were shopping for videogames at different stores. Participants read the following scenario:

> *Imagine that four individual consumers (Aaron, Bob, Chris, and David) are out shopping for video games at four different stores. At each store they find out that there are different videogames. Each of them wants to form a smaller subset of 4 video games they want to evaluate before making the final choice.*
>
> *They can choose one of the following two methods to form a smaller subset of video games they would like to consider further.*
>
> *Inclusion – Look at all video games. Decide which videogames they WOULD SERIOUSLY CONSIDER for purchase. Create a smaller subset of these 4 videogames.*
>
> *Exclusion – Look at all video games. Decide which video games they WOULD NOT SERIOUSLY CONSIDER for purchase. Create a smaller subset of the remaining 4 videogames.*

At this point, participants were told about four different consumers who were either sure or not sure of what videogames they were interested in. Uncertainty was manipulated by varying the clarity of preferences and familiarity with the product. High uncertainty was created by

telling participants that the consumer is not familiar with videogames and is not clear about what he wants and he is not sure about what videogames he might be interested in. Low uncertainty was created by telling participants that the consumer is familiar with videogames, is clear about what he wants, and is very sure about what videogames he might be interested in. Task complexity was manipulated by giving the consumer either 20 (high complexity condition) or 10 videogames (low complexity condition) to choose from.

Participants were told that the (hypothetical) consumer could form a smaller subset using one of the two methods, inclusion or exclusion. Using inclusion method meant that the consumer would look at all the videogames, decide which videogame he would seriously consider for purchase and then create a smaller subset of these 4 videogames. Exclusion on the other hand meant that the consumer would look at all videogames, decide which videogames he would not seriously consider for purchase, and then create a smaller subset of the remaining 4 videogames.

After respondents read the shopping scenario, they were asked to indicate which screening strategy the consumer was most likely to use for forming a smaller subset of videogames. The dependent variable was thus, the likelihood that the consumer will use a particular screening strategy to form the consideration set. The dependent variable was measured for each consumer on an eight-point scale, where 1 indicated more likely to use inclusion and 8 indicated more likely to use exclusion. Finally, perceived accuracy was measured for each consumer using a seven-point scale anchored by 1 = least accurate and 7 = most accurate. Similarly, perceived effort was measured using a seven point scale anchored by 1 = least effortful and 7 = most effortful.

2.4.2: Results

Choice of screening strategy (H_1). A mixed design ANOVA was performed to test the effect of uncertainty and complexity on the choice of screening strategy with the order of presentation as a between-subjects factor. The choice of screening strategy was not sensitive to the order of presentation ($F(3, 26) = 0.69$, NS). Further, the order of presentation did not interact with any other variables (all F's < 1). Next, I examined the effect of perceived uncertainty and task complexity on the choice of screening strategy. The uncertainty manipulation significantly influenced the choice of screening strategy ($F(1, 26) = 14.43$, $p < .001$). Consumers in the high uncertainty condition were more likely to choose exclusion as the screening strategy ($M_{\text{High Uncertainty}} = 4.95$) than those in the low uncertainty condition ($M_{\text{low uncertainty}} = 2.72$). Task complexity manipulation however, did not significantly influence the choice of screening strategy ($F(1, 26) = 2.36$, NS, $M_{\text{High complexity}} = 4.11$, $M_{\text{Low Complexity}} = 3.56$). Further the interaction of uncertainty and complexity was not significant ($F(1, 26) = 2.36$, NS). These results show that, as hypothesized, uncertainty, and not task complexity influences the choice of screening strategy while forming the consideration set, thus supporting H_1.

Accuracy Considerations in the Choice of Screening Strategy (H_2). To test the hypothesis that consumers' considerations of accuracy of the screening strategy mediates the effect of uncertainty on the choice of screening strategy, it needs to be shown that such accuracy considerations drive the difference in the choice of screening strategy. I demonstrate this using the three step procedure suggested by Baron and Kenny (1986).

The mediation analysis shows that in addition to the significant effect of uncertainty on the choice of screening strategy as discussed earlier, uncertainty significantly influences consumers' perception of accuracy ($F(1, 25) = 8.99$, $p < .01$). Finally, when accuracy is included

in the model along with uncertainty, the effect of uncertainty on screening strategy becomes non significant ($F(1,24) = .97$, NS), while the effect of accuracy considerations on the choice of screening strategy is still significant ($F(1,24) = 5.13$, $p < 0.05$). Thus, accuracy consideration receives support for the three criteria to demonstrate a mediating process. Further, to rule out an alternate explanation of perceived effort mediating the perceived uncertainty – screening strategy relationship, I used the same procedure suggested by Baron and Kenny (1986). Since perceived uncertainty did not have a significant effect on the perceived effort ($F(1,25) = 3.00$, NS, it can be concluded that effort considerations did not mediate the effect of uncertainty on the choice of screening strategy. Thus, in support of the mediation hypothesis (H_2), accuracy considerations mediate the effect of uncertainty on the choice of screening strategy.

2.4.3: Discussion

The results of Study 1 are consistent with the hypothesis that the choice of screening strategy is sensitive to uncertainty in the choice process. As uncertainty increases consumers are more likely to screen alternatives using the exclusion strategy. Task complexity did not influence the choice of screening strategy. Additionally, the choice of screening strategy is driven by the accuracy considerations while making a choice.

The limitations of this study include the use of a within-subject task where participants were exposed to all the levels of uncertainty and complexity. It can be argued that since the differences in uncertainty and complexity across conditions are clearly evident to participants, it might have prompted their choice of screening strategy. However, in a choice task seldom do consumers actually know the level of uncertainty in relation to the other consumers or other situations. Another limitation of this study stems from the design of the study. Participants were

asked to indicate what other hypothetical consumers would do if they were in a similar situation (third person reference). It can be argued that participants' choice of screening strategy reflects their prediction for the hypothetical consumer in the study and that when consumers have to form a consideration set for themselves (first person reference) they may not be sensitive to uncertainty or task complexity. I address these issues in study 2.

2.5: Study 2

To address the limitations arising in study 1 I conducted study 2, where participants chose a screening strategy to form a consideration set for themselves in a between-subjects task. In study 2, I predict that uncertain consumers are more likely to choose exclusion screening strategy while task complexity will not influence the choice of screening strategy.

2.5.1: Method

One-hundred and twenty-six students from a large South-Eastern university participated in this study. The experimental stimuli consisted of a decision making scenario where participants were looking to rent an apartment. They had to screen the available alternatives and form a consideration set of apartments they would like to consider for further evaluation. The design was a 2 (uncertainty: high or low) x 2 (task complexity: high or low) between-subjects experiment. In this study, participants were told to imagine that they are going to attend college and they want to rent an apartment in the city. Perceived uncertainty was manipulated similar to study 1. In addition, participants had to rent an apartment in a city that they were either familiar with (low uncertainty condition) or unfamiliar with (high uncertainty condition). The task complexity manipulation was identical to Study 1. Participants were asked to form a

consideration set of four apartments from the either ten (low complexity) or twenty different apartments (high complexity). A pretest (n = 66) was conducted to test the manipulation of task complexity using a two- item seven-point semantic differential scale (anchored by not complex – complex, not complicated – complicated). Results of the pretest showed that choosing from ten available apartments was perceived as significantly less complex task (M = 3.91) than choosing from twenty different apartments (M = 4.62), (F(1,64), = 4.31, $p < .05$). Thus, participants were asked to read the following scenario:

> *Imagine that you are going to attend college in Orlando, Florida (Fairbanks, Alaska) and you need to rent an apartment in the city. There are 10 (20) different apartments that you can rent. You are (not) familiar with renting apartments in Orlando, Florida (Fairbanks, Alaska) and are not clear about what you want. You are (not at all) sure about the apartment you might be interested in.*
>
> *Of the 10 (20) apartments that you can rent, you want to form a smaller subset of 4 apartments you would like to evaluate further before making the final choice.*
>
> *You can choose one of the following two methods to form a smaller subset of apartments you would like to consider further.*
> *Inclusion – Look at all apartments. Decide which apartments you WOULD SERIOUSLY CONSIDER for renting. Create a smaller subset of these 4 apartments.*
> *Exclusion – Look at all apartments. Decide which apartments you WOULD NOT SERIOUSLY CONSIDER for renting. Create a smaller subset of the remaining 4 apartments.*

The experimental procedure was similar to that of Study 1. After reading the decision scenario, participants could form a smaller subset of apartments for further evaluation using either the exclusion or inclusion strategy. Instructions for exclusion and inclusion strategies were identical to those of Study 1. Participants were then asked to indicate which strategy they were most likely to use to form the smaller subset of apartments for further evaluation. Like Study 1, the dependent variable was participants' likelihood of using the screening strategy, measured on a eight-point scale where 1 indicated more likely to use inclusion and 8 indicated more likely to

use exclusion. Next, participants' accuracy and effort considerations were measured using the same scales as used in Study 1. Finally, uncertainty in choosing a rental apartment was measured by two-item, seven-point semantic differential scale (anchored by unsure – sure; uncertain – certain).

2.5.2: Results

The manipulation check verified that there was a significant difference in participants' perceived uncertainty across the two levels of uncertainty manipulated in the study. Participants who were choosing a rental apartment in a familiar city were less uncertain ($M_{\text{Low Uncertainty}}$ = 2.32) as compared to those who were choosing a rental apartment in an unfamiliar city ($M_{\text{High Uncertainty}}$ = 3.30, $F(1, 122) = 18.14$, $p < .001$).

Choice of screening strategy (H_1). A two-way ANOVA was performed to test the effect of uncertainty and complexity on the choice of screening strategy. Results were consistent with H_1 and showed that the uncertainty manipulation significantly influenced the choice of screening strategy ($F(1, 122) = 5.40$, $p < .05$). Consumers in the high uncertainty condition were more likely to choose exclusion as the screening strategy ($M_{\text{High Uncertainty}}$ = 4.25) than those in the low uncertainty condition ($M_{\text{low uncertainty}}$ = 3.21). Task complexity manipulation however, did not significantly influence the choice of screening strategy ($F(1, 122) = .77$, NS). Further, the interaction of uncertainty and task complexity was not significant ($F(1, 122) = .24$, NS). These results show that, as hypothesized, uncertainty and not task complexity influences the choice of screening strategy in forming the consideration set and thereby provide robust support for the results from Study 1.

Insert figure 2.1 about here

Accuracy Considerations in the Choice of Screening Strategy (H_2). As in Study 1, I tested the mediating effect of accuracy considerations on the relationship between uncertainty and the choice of screening strategy. I used the three step procedure suggested by Baron and Kenny (1986) as detailed in study 1. In addition to the significant influence of perceived uncertainty on the choice of screening strategy, as discussed earlier, it also significantly affected consumers' consideration of accuracy of the screening strategy ($F(1, 122) = 4.61$, $p < .05$). When accuracy is included in the model along with uncertainty and task complexity, the effect of uncertainty on screening strategy becomes non significant ($F(1, 121) = 2.74$, NS), while the effect of accuracy considerations on the choice of screening strategy is still significant ($F(1, 121) = 16.02$, $p < 0.001$). Thus, accuracy consideration receives support for the three criteria to demonstrate a mediating process. Thus, in support of H_2, accuracy consideration mediates the effect of uncertainty on the choice of screening strategy. Further, similar to Study 1, effort considerations did not receive support for the mediating role on the relationship between perceived accuracy and screening strategy. Although, perceived uncertainty significantly influenced the choice of screening strategy ($F(1, 122) = 5.40$, $p < .05$), it did not significantly influence effort considerations ($F(1, 122) = .16$, NS)

2.5.3: Discussion

The results of the study are consistent with the hypothesis that the choice of screening strategy is sensitive to uncertainty in the choice process. As uncertainty increases, consumers are more likely to screen alternatives using the exclusion strategy. Task complexity, however, did not influence the choice of screening strategy. Additionally, the choice of screening strategy is driven by the accuracy considerations relating to the screening strategy while making a choice. I find that this relationship holds even when consumers have to choose a screening strategy for themselves as well as when they predict the choice of a screening strategy for a hypothetical consumer. Second, I demonstrated that the pattern of results is similar even when the uncertainty manipulation was subtle and the difference in uncertainty levels across conditions was not evident to the participant (Figure 1). Thus, I demonstrated that the limitations discussed in study 1 cannot explain the relationship between uncertainty and screening strategy.

Studies 1 and 2 show that highly uncertain consumers are more likely to choose exclusion screening strategy because they perceive that the use of exclusion strategy will lead to more accurate decisions. The mediating role of perceived accuracy has received strong support in both studies 1 and 2. In both these studies, the mediating role of perceived accuracy was demonstrated through measurement-of-mediation design (Spencer, Zanna, and Fong 2005), where the underlying psychological process of perceived accuracy was measured and then subjected to a mediation test procedure proposed by Baron and Kenny (1986). Another approach to demonstrate the mediating effect is to utilize a moderation analysis and experimentally manipulate the proposed psychological process (Spencer, Zanna, and Fong 2005). I propose that the mediator in this research, perceptions of accuracy, may be susceptible to the characteristics of the task at hand. The number of options consumers consider for further evaluation (consideration

set size) is one such task characteristic that may influence the uncertainty-screening strategy relationship. Next, I will argue how consideration set size will moderate the uncertainty-screening strategy relationship demonstrated earlier.

2.6: The Moderating Role of Consideration Set Size

The psychological process underlying the relationship between an independent and dependent variable can be tested in one of two ways: 1) by measuring the mediator and statistically testing the role of mediator using the Baron and Kenny (1986) procedure (also called measurement-of-mediation design); and 2) by experimentally manipulating the proposed process (also called moderation-of-process design) (Spencer, Zanna , and Fong 2005). The later method has been argued to provide strong demonstration of the underlying psychological process by utilizing the power of experiments to demonstrate causality (Spencer, Zanna , and Fong 2005). While I demonstrated the underlying mechanism in Studies 1 and 2 through the measurement-of-mediation design, here I will use the moderation-of-process design to establish the underlying psychological process. I argue that consideration set size will moderate the relationship between uncertainty and screening strategy by influencing the perceived accuracy of the screening strategy. The use of consideration set size to vary the underlying psychological process adheres to the idea of minimal manipulation in psychology (Prentice and Miller 1992) since an alteration in just the number of alternatives in the consideration set is proposed to significantly alter the underlying psychological process.

The number of alternatives that consumers consider for further evaluation, called the consideration set size, is an important descriptive characteristic of the consideration set (Desai and Hoyer 2000). Consideration set size is conceptually distinct from the total number of

alternatives available to choose from (complexity). While complexity (discussed in Studies 1 and 2) related to the number of alternatives available to choose from, consideration set size refers to the number of alternatives that the consumer considers for further evaluation. Further discussion of consideration set size assumes a constant number of alternatives to choose from.

Extant literature has typically viewed the consideration set size as an outcome of the screening strategy selected. A common finding is that sets created by using exclusion are systematically larger than those created by inclusion (Levin, Jasper, and Forbes 1998; Levin, Huneke, and Jasper 2000; Yaniv and Schul 1997, 2000). However, the number of alternatives a consumer chooses can be argued to be an integral characteristic of the task at hand. Task characteristics have been shown to influence decision making and forecasting (Beach, Barnes, and Christensen-Szalanski 1986; Payne, Bettman, and Johnson 1993).

The number of options that consumers have to choose from provides frames that they use to view and represent the problem (Shafir 1993). Shafir (1993) demonstrated that when a majority of options (e.g. five of six) are to be chosen the task is represented as choosing one, while the task of rejecting a majority of options (e.g. five of six) is also seen similarly as choosing one alternative. Support for this proposition was further advanced by Abdul-Muhmin (1999), who demonstrated that participants instructed to choose three or seven options (of ten available options) searched for similar amounts of the available information and those instructed to choose five options searched for less of the available information. Since forming a consideration set is a stage in the decision making process it is reasonable to assume that such task frames will also influence the process by which the consideration set itself is formed. I propose that the consideration set size (number of options to choose) will interact with the uncertainty consumers face during decision making to influence the choice of screening strategy.

This is supported by the two lines of reasoning discussed earlier, learning and probabilistic reasoning.

As discussed earlier, when consumers consider only a small proportion of all available alternatives (e.g. four of ten) then use of exclusion screening strategy will viewed as making significantly more number of decisions, thus providing more opportunities to learn. However, when consumers form larger consideration set (e.g. six of ten) then inclusion will be viewed as making more number of decisions instead and thus providing more opportunities to learn. Such learning is especially beneficial to uncertain consumers who are more likely to now use inclusion screening strategy.

Consideration set size also influences the probability of what appears to be the typical and hence accurate response. When consideration sets contain a smaller proportion of all available alternatives, majority of the options will not be considered for evaluation and this category of options seem to be the most probable category. However, when consumers will form larger consideration sets, where a greater proportion of available alternatives will be considered for further evaluation, the most probable category is that the option will be considered. Highly uncertain consumers are more likely to use the category with higher probability as the most representative and hence most accurate path to screening. For example, uncertain consumers who form a consideration set of four alternatives (out of the 10 available alternatives) will choose exclusion as the screening strategy since the probability that an alternative will not be considered is higher (0.6) as compared to it being considered (0.4). However, when the task involves forming a consideration set of six alternatives (from ten available alternatives), the probability that an alternative will be considered is higher (0.6) as compared to it not being considered (0.4). Highly uncertain consumers who are not sure of their preferences and/or how to choose are more

likely to use the higher probability (0.6) as an indicator to the natural response that will yield a more accurate choice. Such accuracy considerations will lead highly uncertain decision makers to choose inclusion as the preferred screening strategy in the choice task that involves forming a larger consideration set.

H_3: *Consideration set size moderates the effect of uncertainty on the choice of screening strategy such that, when forming smaller consideration sets consumers with high (low) levels of uncertainty are more likely to choose exclusion (inclusion); whereas when forming larger sets consumers with high (low) uncertainty are more likely to choose inclusion (exclusion) as the preferred screening strategy to form consideration sets.*

2.7: Study 3

The previous two studies demonstrated that consumers' choice of screening strategy is sensitive to how uncertain consumers felt during the choice task. The objective of this study is to show that for highly uncertain decision makers, the choice of screening strategy is sensitive to the size of the consideration set. As done by Shafir (1993), size of the consideration set will be manipulated by altering how many of the total available alternatives will be considered for further evaluation. Here it must be noted that the larger consideration set must consist of alternatives greater than half of the available alternatives and the smaller set must consist of alternatives less than half of the total number of available alternatives.

As in the previous studies, uncertainty will be manipulated by altering the knowledge and understanding of the product category and specific preferences (Urbany, Dickson, and Wilkie 1989). The number of available alternatives to choose from is the same across different conditions.

2.7.1: Method

One hundred and twenty-two participants were recruited for this study from a large South-Eastern university. The hypothesis was tested using a 2 (uncertainty: high or low) x 2 (consideration set size: large or small) between-subjects experiment. The experimental stimuli consisted of a decision making scenario as in study 2, where respondents were told that they are looking to rent an apartment and had to screen the available alternatives to form a consideration set of apartments they would like to consider for further evaluation. Uncertainty manipulations were exactly identical to those used in Study 2. Participants in the high uncertainty condition were told that they are renting an apartment in a city they are unfamiliar with and they are not sure about what they want or the kind of apartment they might be interested in. Participants in the low uncertainty conditions were told that they want to rent an apartment in a city they were familiar with and are sure about what they want and the kind of apartment they might be interested in. Consideration set size was altered by asking participants to form a larger consideration set of sixteen or a smaller set of four apartments out of the same available twenty apartments.

The experimental procedures were similar to those used in Studies 1 and 2. After reading the decision scenario, participants could form a smaller subset of apartments for further evaluation using either the exclusion or inclusion strategy. Instructions for exclusion and inclusion strategies were similar to those in previous studies. Participants were asked to indicate which strategy they are most likely to use to form a smaller subset of apartments for further evaluation. The dependent variable was participants' likelihood of using the screening strategy measured on an eight-point scale. Accuracy considerations were measured using the same scales

as used in study 2. Finally, perceived uncertainty in choosing a rental apartment was measured by two-item, seven-point semantic differential scale as in Study 2.

2.7.2: Results

The manipulation check verified that there was a significant difference in participants' perceived uncertainty across the two levels of uncertainty manipulated in the study. Participants who were choosing a rental apartment in a familiar city were less uncertain ($M_{\text{Low Uncertainty}}$ = 2.34) as compared to those who were choosing a rental apartment in an unfamiliar city ($M_{\text{High Uncertainty}}$ = 3.50, $F(1, 118) = 24.97$, $p < .001$). Further, there was no main effect of consideration set size, nor the interaction between uncertainty and consideration set size (F's < 1).

Choice of screening strategy (H_3). A two-way ANOVA was performed to test the effect of uncertainty and set size on the choice of screening strategy. First, there was no significant main effect for either perceived uncertainty ($F(1, 118) = .05$, NS) or consideration set size ($F(1, 118) = 1.63$, NS). Second, results were consistent with the hypothesis and showed that the interaction of uncertainty and set size was significant ($F(1, 118) = 8.79$, $p < .01$).Consumers in the low uncertainty condition that formed a smaller set were more likely to use inclusion ($M_{\text{Low Uncertainty / small set}}$ = 3.21) as compared to those in the high uncertainty condition forming a smaller set ($M_{\text{High Uncertainty / small set}}$ = 4.62) ($F(1, 118) = 76.47$, $p < 0.01$). This is consistent with findings from studies 1 and 2. Further, consumers in the low uncertainty condition when formed a larger set, were more likely to choose exclusion as the screening strategy ($M_{\text{Low Uncertainty / Large set}}$ = 5.09) than those in the high uncertainty condition and forming a larger set ($M_{\text{High Uncertainty / Large set}}$ = 3.87) ($F(1, 118) = 110.01$, $p < 0.01$). These results show that, when faced with high uncertainty

and forming larger consideration sets consumers are more likely to choose inclusion screening strategy, thus supporting H_3.

Insert figure 2.2 about here

2.7.3: Discussion

The results of Study 3 were consistent with the hypothesis that whereas uncertain consumers forming smaller consideration sets were more likely to use exclusion as the preferred screening strategy, they were more likely to use inclusion while forming larger consideration sets (Figure 2). This result is important in demonstrating the underlying mechanism as suggested by Spencer, Zanna , and Fong (2005) and validate the results found earlier in Studies 1 and 2.

2.8: Study 4

The three studies reported here provide strong support to the relationship between uncertainty and choice of screening strategy. While studies 1 and 2 demonstrate this relationship along with the underlying psychological mechanism, study 3 shows that this relationship will flip when consumers form large consideration sets. Whereas these results were demonstrated in internally valid laboratory experiments, demonstrating this relationship in an ecologically valid real life decision making situation will contribute to better understanding of this relationship (Winer 1999). Thus, the objective of Study 4 was to test the relationship between uncertainty and the choice of screening strategy using data from real-life decision making scenarios.

2.8.1: Who wants to be a Millionaire? game show

Study 4 used data from the TV show *Who Wants to be a Millionaire?*. Data from such natural experiments have been used to investigate decision behavior under conditions of uncertainty and risk (e.g. Gertner 1993; Metrick 1995; He, Inman, and Mittal 2008). The TV show *Who Wants to be a Millionaire?* not only provides an ecologically valid decision making situation, but is also incentive compatible as contestants receive cash prize for their performance on the show. Contestants may answer up to 15 questions to earn up to maximum prize money of $1,000,000 with questions ranging in value from $100 to $1,000,000. Contestants can advance to the next question only if they answer the previous question correctly.

Each question has 4 possible answers and contestants have to choose the answer which they think may be the correct answer. Each contestant also has the option to seek help from "lifelines" like polling the audience, asking for random elimination of two incorrect responses, calling a friend for help with answering the question, and switching the question with another question worth the same dollar value. Each lifeline can be used only once, although multiple lifelines can be used to answer any one question. Contestants remain in the show until they can answer questions correctly and receive the cash prize equivalent to their last correct response.

2.8.2: Method

Data. Data were collected by recording 24 episodes of *Who Wants to be a Millionaire?* that were broadcast on ABC television between May and June 2007. The shows were then transcribed to text by extracting closed captions from the recorded shows. The show format allows contestants to verbalize their thoughts as they go through the decision making process and

all such verbalizations were recorded and transcribed. Consistent with the recommendations of Ericsson and Simon (1993), all information (including pauses and any expressions the contestants made) were transcribed and retained in the transcript. These verbalized thoughts were then subjected to verbal protocol analysis (Ericsson and Simon 1993).

Forty-one adult contestants participated in the 24 shows used in the study (males = 20). In all, contestants were asked 419 questions. Of these, 140 questions were selected for verbal protocol analysis using the following three criteria. First, only questions where contestants verbalized their thoughts were used for further analysis as only such questions were deemed meaningful for verbal protocol analysis. Second, for questions where contestants used a "lifeline", thoughts that were verbalized only before the use of lifeline were used for the analysis. Thoughts that were generated before using "lifelines" are independently generated by the contestant and are thus suitable for the analysis. Third, only questions where contestants made a choice for the final answer were used for further analysis. Questions that met these three criteria were selected and subjected to further analysis.

All the verbalized thoughts were coded by two independent coders blind to the hypotheses. The coders were trained to use the coding procedure using transcripts from a show that were not part of the data. Coders followed a two step coding procedure for the verbal protocol analysis. First, coders segmented all the verbalized thoughts into distinct thoughts that were meaningful and conceptually independent. Each segment thus represented one instance of a general process or a separate idea (Ericsson and Simon 1993). This is an important step to ensure objectivity in the subsequent steps. The inter-coder reliability for this step was 0.83. All disagreements were resolved by discussion between the two coders. Next, coders encoded each segment into one of five categories uncertainty, certainty, inclusion, exclusion, or others. To

keep the range of context used in the coding as narrow as possible, coders were instructed to encode the segments based on the information contained in the segment itself (Ericsson and Simon 1993). Some examples of verbalized uncertainty are “I don’t have a clue. Don’t even have a guess”, “I have no idea”, and “I am not sure of anything”. Examples of contestants’ verbalization of certainty were “I have heard of this before”, “Oh my God, I think I know this”, “Yeah yeah, I am pretty sure”. Verbalizations of inclusion included among others “Its “A,” Paul Bunyan, final answer” and “You know, I am going to go with “B” playground”. Instances of verbalizations of exclusion included “A whale doesn’t transport [contraband], a tiger doesn’t transport [contraband], and neither does the fox”. The inter-coder reliability for this step of encoding segments into categories was 0.88. All disagreements were resolved by discussion between the coders.

Dependent Variable. The dependent variable was the extent of use of inclusion or exclusion as the screening strategy (*Strategy*). For each question, choice of screening strategy was operationalized by computing the difference between the number of instances of exclusion and inclusion. Higher scores indicated greater use of exclusion screening strategy by the contestant.

Independent Variable. The independent variable was the degree of uncertainty that contestants verbalized for each question in the show (*Uncer*). For each question, uncertainty was operationalized by computing the difference between the total number of thoughts that reflected uncertainty and total number of thoughts that reflected certainty. Higher scores indicated that the contestant was more uncertain during the choice process.

Control Variables. Whether contestants used lifelines or not was recorded as a dummy variable (*Lifeline*). Additionally, the dollar value of the question was recorded and coded as low,

medium, or high. The total of 15 questions were grouped into three sets of five questions each. Questions that were worth $100 - $1,000 were coded as *Dlow*, questions from $2,000 - $25,000 were coded as *DMedium*, and those greater than $25,000 were coded as *DHigh*. Further, within-contestant correlations were accounted for by the variable *Resp*. The following regression model was used for analysis:

$$Strategy = \beta_0 + \beta_1 Uncer + \beta_2 Lifeline + \beta_3 DLow + \beta_4 DMedium + \varepsilon \ldots\ldots\ldots\ldots\ldots (1)$$

2.8.3: Results

Data were analyzed using the regression model explained above. First, the model was estimated by Ordinary Least Squares (OLS) method. The dependent variable used for this analysis was the choice of screening strategy *(Strategy)*. As expected, contestant's perceived uncertainty had a significant impact on the choice of screening strategy such that when contestants perceived higher uncertainty in the choice process they were more likely to use exclusion screening strategy ($b = .05$, $p < .05$). Among the control variables in the model, *Lifeline* was significant *(*$b = .23$, $p < .05$) indicating the preference for exclusion screening strategy when contestants used lifelines. Further, *DLow* ($b = .28$, $p < .05$), and *DMedium* ($b = .31$, $p < .05$) were both statistically significant.

An important aspect of the game was that the same contestant answered multiple questions during the game. Thus, it is possible that the choice of screening strategy for these questions may be correlated because of individual-specific factors. Failure to account for contestant-specific correlations in the analysis may lead to biased estimates of regression coefficients and incorrect inferences about the regression estimates (Diggle, Heagerty, Liang, and Zeger 2002). Therefore, I estimated the OLS model incorporating the contestant-specific

correlations *(Resp)*. Analysis of the data by random effects regression shows that contestant's perceived uncertainty had a significant impact on the choice of screening strategy such that when contestants perceived higher uncertainty in the choice process they were more likely to use exclusion screening strategy ($b = .05$, $p < .05$)[1]. An interesting finding is that among the control variables in the random effects model, only *DMedium* ($b = .31$, $p < .05$) was statistical significant. However, *Lifeline and DLow* did not reach statistical significance. Thus, regardless of whether the model accounted for contestant-specific correlations, the choice of screening strategy was influenced by contestant's perceived uncertainty (Table 1). This illustrates that within-contestant correlations cannot account for the effect of uncertainty. Therefore, these results not only replicate findings from Studies 1, 2, and 3, but also lend robustness to the inference regarding the role of uncertainty on the choice of screening strategy.

Insert table 2.1 about here

2.8.4: Discussion

Results of study 4 lend support for the relationship between uncertainty and screening strategy in ecologically valid context using data from a TV game show. Thus, I demonstrate that

[1] An alternate analysis with discrete dependent variable produced similar results. The alternate dependent variable (Strategy1) was created by coding the choice of screening strategy as either inclusion or exclusion. If the difference between the number of instances of exclusion and inclusion was negative the choice of screening strategy was coded as exclusion, otherwise it was coded as inclusion. The model specification for logit analysis was: $Strategy1 = \beta_0 + \beta_1 Uncer + \beta_2 Lifeline + \varepsilon$. The dummies for the dollar value of the question were dropped from the model to correct for inflated standard errors. Further, the mixed-logit model accounting for contestant-specific correlations in the analysis also produced similar results.

even in a natural decision making situation like choosing one answer from multiple alternatives as in the game show, when contestants were highly uncertain they were more likely to use exclusion screening strategy. This finding not only replicates but also validates earlier findings from the experimental studies (Studies 1 and 2).

2.9: General Discussion

2.9.1: Theoretical Contributions

Screening alternatives to form consideration sets is an important stage in the choice process. Screening influences not only what options will be considered for choice by determining the contents of the consideration set (Heller, Levin, and Goransson 2002; Yaniv and Schul 1997, 2000), but also influences the nature of final choice (Chakravarti, Janiszewski, and Ulkumen 2006). The two screening strategies used; inclusion and exclusion; operate by different psychological processes and produce differential outcomes (Yaniv and Schul 1997, 2000). Thus, it is imperative to understand when and why consumers will choose one screening strategy over the other.

This paper was motivated by the belief that individual characteristics of the decision maker not only influence the final choice (Payne, Bettman, and Johnson 1993), but also the choice of screening strategy to form consideration sets. In this paper, I examined the role of consumers' perceived uncertainty on the choice of screening strategy. Perceived uncertainty is an important characteristic of the individual decision maker and is prevalent in most routine decision making situations. For example, when consumers choose from a number of available options, they may be uncertain about the benefits of the various options, the importance of

specific attributes, or simply how to choose. Such uncertainties have a profound impact on the decision process and the final choice as well (Jacoby et al. 1994; Kahn and Meyer 1991; Tversky and Kahneman 1974).

Studies 1 and 2 in this paper provide support to the hypothesis that when consumers face high levels of uncertainty in the choice process, they will use exclusion screening strategy to screen alternatives. This finding is important from a theoretical perspective for two reasons. First, it furthers existing literature in screening strategies by demonstrating conditions under which one screening strategy may be chosen over the other. Second, this finding highlights the critical role of perceived uncertainty in the choice process. While the impact of perceived uncertainty on choice of decision heuristic (Tversky and Kahneman 1974), assignment of attribute weights (Kahn and Meyer 1991), and information search strategies (Jacoby et al. 1994) have been researched to a great extent, its impact on screening strategy has not received much attention. By demonstrating the impact of perceived uncertainty on the choice of screening strategies, this research underscores the effects of such perceived uncertainty on the stages of decision making preceding the final choice; i.e. screening alternatives and forming consideration sets. Further, I also demonstrated this relationship in an ecologically valid decision making scenario. The impact of uncertainty on the choice of screening strategy is robust across different product categories (decision making scenarios) (videogames, apartment rental, and game shows), types of data (experimental and non-experimental), research designs (within-subject and between-subjects), and analysis tools employed (ANOVA, OLS, random effects regression, Logit, and mixed-Logit models). Finally, Generalization of the findings across a variety of decision tasks and scenarios further emphasizes the far reaching impact of perceived uncertainty on decision making, one that may have implications for the well being of the decision makers.

While results for the impact of perceived uncertainty on the choice of screening strategy was robust across the studies presented in this paper, the choice of screening strategy was not sensitive to the number of alternatives to choose from. In this paper, I have manipulated uncertainty and task complexity independently and have thus disentangled the effect of each on the choice of screening strategy. First, from a theoretical perspective it is consistent with Payne, Bettman, and Johnson's (1993) notion that the decision problem characteristics (task and context) and the decision maker's characteristics interact to influence decision behavior. Since task complexity is a task characteristic and perceived uncertainty is a characteristic of the individual decision maker, they may have differential impact on decision behavior, including the choice of screening strategy to form consideration sets. Also, the finding that the choice of screening strategy is not as sensitive to task complexity implies that although task difficulty and task complexity are related constructs, the use of one or the other interchangeably to investigate decision behavior may lead to erroneous conclusions. Again, this is in line with Schoemaker's (2004) argument for the need to investigate the independent effects of these two related but distinct concepts.

Another important finding from this research is that consumers' choice of screening strategy is driven by their accuracy considerations. This means that consumers choose the screening strategy that will increase the perceived accuracy of their choice. Uncertain consumers think that the accuracy of their choice using exclusion screening strategy will be higher than had they chosen inclusion. This is an important finding that extends the notion that screening is primarily driven by the motivation to prevent bad options from entering the consideration set (Beach 1990, 1993; Beach and Mitchell 1987, 1990). Thus, to the extent that consumers form a

"good" consideration set they are more likely to make a good choice in the second stage of the choice process.

While perceived accuracy drives the choice of screening strategy, what appears to be more accurate strategy can be influenced by the nature of the decision task itself. For instance, results of Study 3 showed that when uncertain consumers form larger consideration sets, the relationship between perceived uncertainty and screening strategy flips such that; uncertain consumers choose inclusion screening strategy instead. This finding provides an important test of theory by explicating a boundary condition that reverses the relationship between uncertainty and choice of screening strategy. Thus the choice of screening strategy is malleable in nature and conforms to the adaptive decision making framework suggested by Payne, Bettman, and Johnson (1993).

2.9.2: Managerial Implications

The finding that the choice of screening strategy is sensitive to perceived uncertainty and not task complexity is relevant from a managerial perspective. It implies that consumers weigh in their perception of uncertainty much higher than how many alternatives they have to choose from. Thus, if a firm wants a brand to be included in the consideration set because of its superiority on a particular attribute, it should focus on reducing consumers' perceived uncertainty regarding the attribute and its importance in the performance of the brand. Such reduced uncertainty would mean that consumers would use that attribute to screen alternatives and include all the alternatives that match the cutoff on that attribute. The screening strategy consumers use to form consideration sets will have more serious implications for a brand that is not clearly superior or inferior on all the attributes (Yaniv and Schul 2000) and for such brands

to be included in the consideration set, firms have to reduce the perceived uncertainty for that brand on some important attribute. These findings also provide managers valuable insights on how consumers choose screening strategies and form consideration sets.

2.9.3: Limitations and Future Research

Although this dissertation contributes to literatures in screening strategies and uncertainty in decision making it is not without limitations. While the impact of uncertainty on the choice of screening strategy is robust across three experimental studies and across different product categories (videogames and apartments), the experiments primarily used hypothetical decision scenarios as the experimental set-up. Yet, it will be interesting to test these predictions using an actual choice set-up where consumers will actually screen alternatives and form consideration sets. Such a study will enhance the ecological validity of the findings reported in this paper.

While this paper has highlighted the role of perceived accuracy as the primary driver of the relationship between perceived uncertainty and the choice of screening strategy, it is not clear whether the use of the strategy will actually improve decision accuracy. For instance, do highly uncertain consumers make objectively better decisions by using exclusion strategy as they anticipate? Future research needs to address whether consumers' perceived accuracy matches the objective accuracy of decisions.

Table 2. 1: Study 4 – The Role of Perceived Uncertainty on Contestants' Choice of Screening Strategy in Who Wants to be a Millionaire?[a]

	OLS Regression (n = 140)		Random Effects Regression (n = 40)	
Variable	Coefficient	Standard Error	Coefficient	Standard Error
Uncertainty	.05**	.03	.05**	.03
Lifeline	.23**	.14	.24	.17
DLow	.28**	.14	.27	.18
DMedium	.31**	.13	.31**	.17
Constant	-1.27***	.12	-1.26***	.15
Overall R^2	.07		.07	
Sigma_u	-		.23	
Sigma_e	-		.52	
Rho	-		.16	

[a] Results are based on two-tailed tests
** $p < .05$; *** $p < .001$

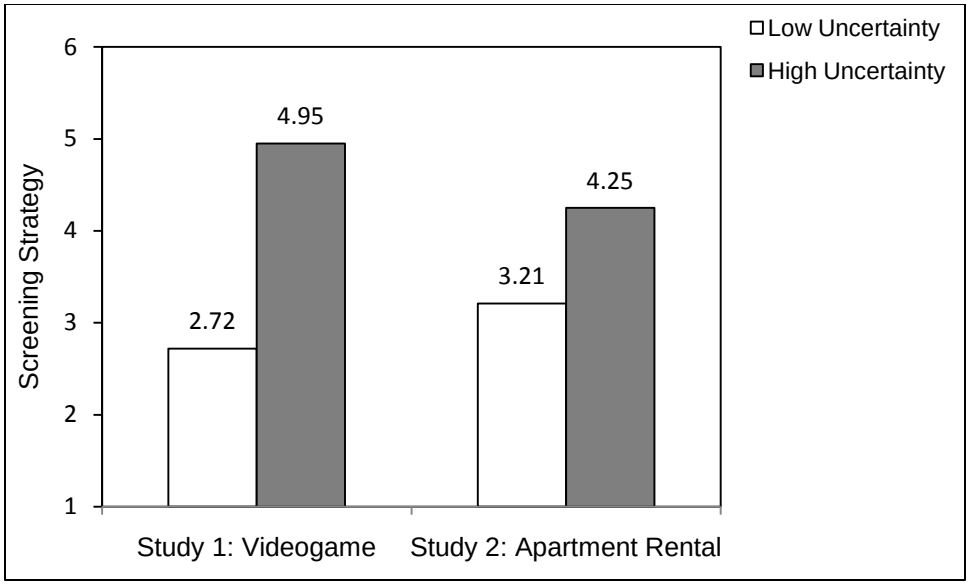


Figure 2.1: Studies 1 and 2 – The Effect of Uncertainty and Complexity on Choice of Screening Strategy

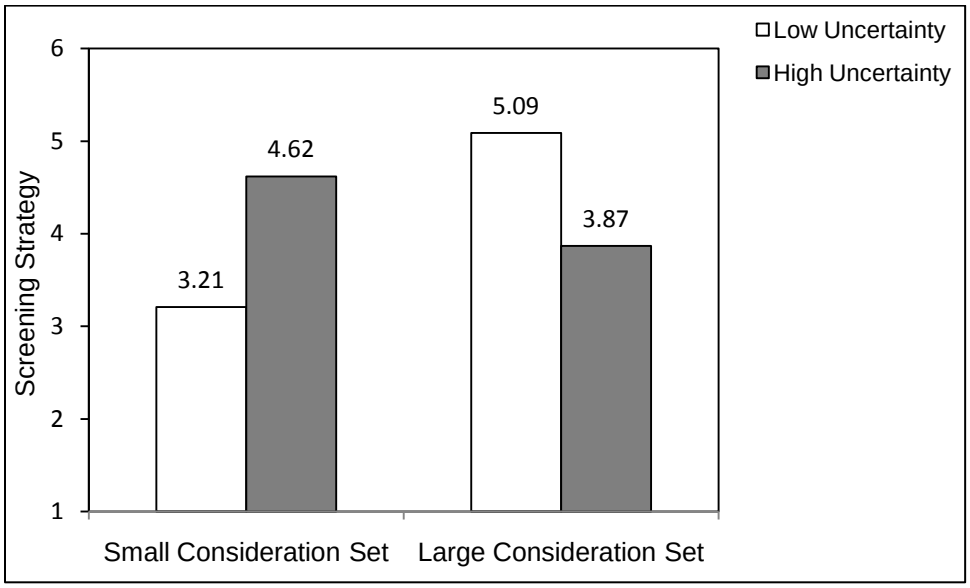


Figure 2.2: Study 3 – The Interactive Effect of Uncertainty and Consideration Set Size on Choice of Screening Strategy

CHAPTER THREE: THE ROLES OF PERCEIVED UNCERTAINTY, SCREENING STRATEGIES, AND CONSIDERATION SET SIZE ON OBJECTIVE DECISION ACCURACY

3.1: Abstract

Consumers screen from all available alternatives using one of two ways: an exclusion screening strategy wherein alternatives not worthy of further consideration are rejected or an inclusion strategy wherein worthy alternatives are selected for further evaluation. This paper investigates the role of perceived uncertainty and consideration set size on the relationship between screening strategy and objective accuracy of decision. Utilizing an experimental study with an actual choice task, I demonstrate that perceived uncertainty moderates the screening strategy-decision accuracy relationship. Further, this interactive relationship is contingent on consideration set sizes. Whereas consumers with high perceived uncertainty make higher quality decisions with inclusion while forming smaller consideration sets, their decision quality is higher with exclusion when forming larger sets. Likewise, while consumers with low perceived uncertainty make more accurate decisions with exclusion when forming smaller sets, the accuracy of their decisions increases with inclusion when forming larger sets.

3.2: Introduction

Consumers screen from all available alternatives (Beach 1990; 1993) and consider a smaller subset of alternatives for further evaluation, called the consideration set (Bettman 1979; Nedungadi 1990). Two types of screening strategies are commonly utilized by consumers to form consideration sets: an exclusion strategy wherein alternatives not worthy of further consideration are eliminated and an inclusion strategy wherein worthy alternatives are included

into the consideration set (e.g. Yaniv and Schul 1997; 2000). Despite the understanding that an important motivation for consumers to engage in screening is to search and choose the best option (Beach 1990, 1993; Beach and Mitchell 1990), there is limited understanding of the consequences of the screening strategy on decision quality. This paper attempts to fill the void by investigating how screening strategies impact decision quality and the factors that impact this relationship.

Two outcomes of using the screening strategy that have been investigated are the number of alternatives considered (consideration set size) and the quality or accuracy of the decision (Heller, Levin, and Goransson 2002; Levin et al. 2001; Yaniv and Schul 1997, 2000). Evidence for the impact of the screening strategy on the size of consideration set is robust, such that sets created by exclusion screening strategy are significantly larger than those created by inclusion (Heller, Levin, and Goransson 2002; Levin et al. 2001; Yaniv and Schul 1997, 2000). However, there is little consensus about the impact of the screening strategy on decision quality. These studies demonstrated that consideration sets created by exclusion strategy are more accurate, but only when the consideration set size is not taken into account. Accuracy in these studies was defined by the outcome of the screening strategy (i.e. the percentage of sets that contain the correct answer). This view of accuracy does not investigate the impact of screening strategies for the objective accuracy of the final choice. This view also ignores the idea that under some conditions one screening strategy may yield decisions with higher accuracy as compared to using the other strategy. For example, it was shown in essay 1 that perceived uncertainty impacts the preference for one screening strategy versus the other. However, both highly uncertain and less uncertain consumers choose the screening strategy based on the perceived accuracy of the strategy and are motivated to make accurate decisions. Thus, the objective accuracy of the

decision should be analyzed in terms of the ability of the screening strategy to improve the likelihood of making a good decision, especially given the level of uncertainty consumers perceive during the choice process.

In this paper, I argue that highly uncertain consumers who use inclusion screening strategy make more accurate decisions and consumers with low perceived uncertainty are better off using exclusion screening strategy. I draw upon the literature on information search in decision making (Payne, Bettman, and Johnson 1993) to suggest that the greater search for information when using inclusion screening strategy, while assisting highly uncertain consumers to make decisions of higher objective accuracy, will hurt consumers with low perceived uncertainty by reducing the objective accuracy of their decision. Furthermore, I argue for an interesting reversal of this interactive effect when consideration set sizes are varied. I show that when consumers form larger consideration sets, highly uncertain consumers are better off using exclusion screening strategy (as opposed to inclusion) and consumers with low perceived uncertainty make decisions with higher objective accuracy if they use inclusion screening strategy (as opposed to exclusion).

I test this hypothesis in an experimental study. I demonstrate the interactive effect of perceived uncertainty and screening strategy on objective decision accuracy using an actual choice task. Further, I show the reversal of the interactive effect of perceived uncertainty and screening strategies on decision accuracy for large consideration sets. Results are generally supportive of the predictions.

3.3: Theoretical Framework and Hypotheses

3.3.1: Screening Strategies and Decision Accuracy

When choosing from a number of available alternatives, consumers form a smaller set of alternatives called the consideration set from which they make the final choice (Bettman 1979; Nedungadi 1990). The process of narrowing down the number of alternatives they will finally consider is called screening (Beach 1990, 1993) and can be achieved by a rejection-based or a selection-based screening strategy. In a selection-based screening strategy, called inclusion, alternatives that meet the predetermined criteria are retained in the consideration set. In a rejection-based screening strategy, called exclusion, alternatives that do not meet the predetermined criteria are screened out from further consideration (see Yaniv and Schul 1997; 2000 for a review). In the case of inclusion, consumers have to decide whether each alternative should be seriously considered for the final choice. In the case of exclusion consumers have to decide for each alternative, whether that alternative should be dropped from further consideration (Heller, Levin, and Goransson 2002).

The process of screening prevents bad options from being considered and as such it is driven by the motivation to search for and ultimately choose the best option (Beach 1990, 1993; Beach and Mitchell 1990). Thus, an important consequence of the act of screening is that it actively increases the likelihood of a better decision by preventing bad options from being considered (Beach 1993).

The quality of decisions is an important consequence of the screening strategy. Screening strategies can be thought of impacting two types of decision accuracies: (1) accuracy of the consideration set, and (2) accuracy of the final choice. Accuracy of the consideration sets refers

to the extent that the consideration set is likely to have good alternatives or alternatives that reflect the consumer's preferences as a result of screening. Accuracy of the final choice refers to the correctness of the final choice as a result of screening, given the consumer's preferences. Both these types of decision accuracies are important to consumers. First, an accurate consideration set is important as alternatives that do not enter the consideration set for further evaluation may not have any chance to get selected in the final choice stage at all (Nedungadi 1990). Further, consideration set composition can influence brand choice regardless of brand evaluations and preferences (Nedungadi 1990). Thus, good consideration sets can improve the chances of making a good choice. Second, making accurate choices is an important motive for decision makers and forms a basis for selecting strategies that optimize final choice outcomes (Payne, Bettman, and Johnson 1993). While the results of the impact of screening strategies on accuracy of consideration sets is fairly robust (e.g. Heller, Levin, and Goransson 2002; Yaniv and Schul 1997), the effect on objective accuracy of final choice has received relatively little attention and therefore, will be the focus of this paper.

Extant literature has mostly investigated the impact of the type of screening strategy used on the quality of the consideration sets formed. Literature has debated the accuracy obtained by the use of one screening strategy versus the other. Most findings suggest that exclusion strategy results in more accurate consideration sets in terms of the proportion of sets that include the correct answer (Heller, Levin, and Goransson 2002; Yaniv and Schul 1997). However, this finding for accuracy is confounded with the size of consideration set. When set size was taken into account, there was no difference in the accuracy of the consideration set formed by using either strategy (e.g. Heller, Levin, and Goransson 2002). Yaniv and Schul (1997) argued that consideration sets formed by exclusion were more accurate at the cost of being less informative.

Thus, screening strategies impact the accuracy of consideration sets due to the fact that the two screening strategies yield consideration sets of differential sizes.

The impact of using one screening strategy versus the other on the final choice is however even more contentious. In a study using multiple-choice questions with one correct response, Heller, Levin, and Goransson (2002) found that participants were slightly more likely to make accurate choices with exclusion than with inclusion. However, when accounted for the differences in set sizes there was no difference in the accuracies of final choice obtained by use of the strategies. Similarly, other research investigating whether the characteristics of the final choice using inclusion or exclusion strategies differed significantly from each other, echoes these findings. Levin, Jasper, and Forbes (1998) and Levin et al. (2001) showed that the attribute weights of final choice did not significantly differ from each other whether participants used an inclusion or exclusion screening strategy. These studies concluded that using an inclusion or exclusion screening strategy did not result in attention to different attributes while making final choice. Finally, Levin, Huneke, and Jasper (2000) also did not find any difference in the quality of final choice made by inclusion or exclusion screening strategy, where decision quality was measured as the average value of the chosen option. Thus, extant research that has taken an outcome-based approach to assess the impact of screening strategies on final choice is inconclusive.

In this paper, I take a process view of accuracy (Payne, Bettman, and Johnson (1993), that assumes a good decision to be one that employs a good process. I argue that to the extent that screening is viewed as providing the opportunity to improve decision quality, accuracy of the decision should be examined by the ability of the screening process to enhance the potential of a good choice. Thus, accuracy of the decision should relate to how the individual decision

maker can improve decision quality by using one screening strategy versus the other. In this paper, I extend the notion that the process of screening not only benefits consumers by preventing bad options from being chosen (Beach 1990, 1993; Beach and Mitchell 1990; Levin, Huneke, and Jasper 2000), but also the choice of the right screening strategy could enhance the quality of final choice through process benefits like information search and learning that occur while screening alternatives. Particularly, I investigate how the accuracies obtained by the use of screening strategies relate to each other given that consumers face varying levels of uncertainty during choice.

3.3.2: The Moderating Role of Perceived Uncertainty

Consumers typically perceive uncertainty while making choices (Hansen 1976; Kahn and Sarin 1988). Consumers may frequently be uncertain of their preferences or how to weight the attributes while making choices (Dhar and Simonson 2003; Kahn and Meyer 1991). Perceived uncertainty has been shown to influence various processes during choice, including decision heuristics (Tversky and Kahneman 1974), attribute weights (Kahn and Meyer 1991), and information search (Jacoby et al. 1994; Mehta, Rajiv, and Srinivasan 2003). Further, it was also shown earlier in this dissertation (essay 1) that perceived uncertainty influences the choice of screening strategy and that the choice of screening strategy was primarily driven by the perception of accuracy obtained by the use of the screening strategy. Specifically, when consumers are highly uncertain they are more likely to choose an exclusion screening strategy to form consideration sets because they perceive that screening by exclusion will help them make more accurate decisions. Less uncertain consumers on the other hand, are more likely to choose inclusion as the preferred screening strategy because they perceive that screening by inclusion

will lead to more accurate decisions. Thus, while the role of perceived accuracy is identified as an important driver for the choice of screening strategy, it is not clear whether the use of one screening strategy versus the other will have an impact on the objective accuracy of final choices made by consumers with varying levels of perceived uncertainty.

In this section, I will argue that the objective accuracy of decisions for highly uncertain consumers who use inclusion strategy will be higher than if they use exclusion. Similarly, when consumers who are low on uncertainty use exclusion screening strategy they are likely to make more accurate decisions than if they use inclusion screening strategy.

The greater accuracy of decisions by using inclusion screening strategy for highly uncertain consumers is supported by literature on information search in decision making. Extant literature suggests that use of inclusion screening strategy means a more intense and in-depth search process. For instance, Levin, Huneke, and Jasper (2000), using a process tracing method of information acquisition, find that participants who were instructed to include options into the consideration sets spent more time examining each alternative as compared to those who were instructed to exclude options from their consideration set. This difference in the intensity of search was especially evident in the choice stage where participants chose one alternative from the consideration set. Moreover, in the same study, participants screening by inclusion searched information regarding more number of attributes per alternative (mean = 4.7 attributes per alternative) as compared to those who screened by exclusion (mean = 3 attributes per alternative) indicating a more broader search in the inclusion condition (Levin, Huneke, and Jasper 2000). Finally, in the same study, participants using inclusion screening strategy also acquired slightly more information per attribute than those using exclusion, although this difference did not reach statistical significance. This implies that use of inclusion screening strategy involves

significantly greater information search, a finding which was especially pronounced during the choice stage of decision making (Levin, Huneke, and Jasper 2000).

One reasoning why using inclusion screening strategy may mean more intense search comes from understanding consideration sets themselves. In general, consideration sets represent a small subset of all available options (Hauser and Wernerfelt 1990). Thus, while forming a consideration set from all available alternatives (e.g., four out of 10 brands), the use of inclusion screening strategy will involve fewer decisions than exclusion screening strategy (i.e., four selection decisions in inclusion screening strategy vs. six rejection decisions in exclusion screening strategy).

Fewer number of decisions means that each decision acquires more significance and will lead to more effort expended by consumers during the decision making at each step. On the contrary, when consumers make more number of decisions, each decision becomes comparatively less important and consumers will apply less effort during each decision. Thus, application of inclusion strategy would lead to more information search at each decision step versus fewer searches for each step with the application of exclusion strategy.

Greater use of available information is related to decision quality. For example, Payne, Bettman, and Johnson (1993, p.89) argue that "a good decision requires the use of all relevant information". From this perspective, decision strategies that use all relevant information and allow weighing the information appropriately are associated with more accurate decisions. Thus, compensatory decision strategies like the weighted additive model have been shown to lead to the most accurate decisions (e.g. Payne, Bettman, and Johnson 1993).

Greater search and use of available information will be especially beneficial to consumers high in uncertainty. For example, Simonson, Huber, and Payne (1988) demonstrate that

consumers that have more uncertain beliefs are more likely to start information search very early on in the choice process. Further, every piece of additional information acquired will significantly help uncertain consumers in the evaluation process. For instance, Meyer (1987) has shown that each additional exposure to information can facilitate the process of product evaluation, especially when consumers were unfamiliar with the product class and unclear about the judgment criteria. In the absence of this information, highly uncertain consumers do not have clear preference structures and are more likely to fall prey to biases that may reduce the quality of decisions. Thus, uncertain consumers are likely to make relatively better decisions using inclusion screening strategy.

Information obtained from greater search, on the other hand, will hurt consumers with low uncertainty. Such consumers generally have a more clear preference structure and are more aware about how to weigh the attributes. However, the increase in information size may potentially dilute their preferences and lead to making choices that may not reflect their true preferences. Some evidence for this is provided by the findings that larger variety in options might confuse consumers leading to weaker preferences and lower choice probability (e.g. Dhar 1997; Greenleaf and Lehmann 1995; Iyengar and Lepper 2000; Simonson 1999). Further, Meyvis and Janiszewski (2002) also show that when presented with information that is not relevant to the evaluation of a product benefit, consumers incorporate the irrelevant information in product perception even when they acknowledge the attribute as irrelevant, thus diluting their preferences . Taken together, this evidence suggest that encountering a large amount of information may change preference for options that may not reflect the initial preferences for consumers low on uncertainty. Therefore, using inclusion screening strategy which involves

more information search may reduce the objective decision accuracy for consumers that are low on uncertainty.

3.3.4: The Moderating Role of Consideration Set Size

As discussed above, the moderating role of perceived uncertainty on the relationship between screening strategy and objective accuracy of decision is driven by the intensity of search that occurs when making varying number of decisions. Therefore, factors that impact search intensity should also influence the interactive relationship between perceived uncertainty and screening strategy on decision accuracy. I argue that consideration set size is one such factor because it influences search intensity during decision making.

Consideration set size refers to the number of alternatives in the consideration set that consumers evaluate before making the final choice (Desai and Hoyer 2000). The moderating role of consideration set size is supported by the mechanism of search intensity discussed earlier, by altering the number of decisions made with inclusion or exclusion screening strategy. As discussed earlier, when consumers form smaller consideration sets (i.e., less than half of all available alternatives), the use of inclusion screening strategy involves fewer decision steps than exclusion screening. As a consequence, consumers search more intensively because each decision acquires more importance. Greater search benefits highly uncertain consumers by allowing them to develop preferences and thus make decisions with higher objective accuracy. Consumers with lower levels of perceived uncertainty are hurt by extensive search as it dilutes their preferences and therefore reduces the objective accuracy of their decisions.

The interactive effect of perceived uncertainty and screening strategy on objective decision accuracy reverses however, in the presence of larger consideration sets. When forming

larger consideration sets (i.e., more than half of all available alternatives), exclusion screening strategy involves fewer decisions than inclusion screening. Since majority of the available alternatives will be retained in the consideration set, rejecting alternatives will require fewer decisions than selecting alternatives. Therefore, while forming larger consideration sets, each decision will acquire more gravity in exclusion screening strategy than in inclusion screening. Consequently, search intensity will be greater in exclusion screening strategy than in inclusion screening strategy. Greater search will be more beneficial to highly uncertain consumers to develop their preferences and make decisions with higher objective accuracy. Consumers with lower levels of perceived uncertainty will be hurt by extensive search as their initial preferences get diluted and they make decisions with lower decision accuracy.

Insert figure 3.1 about here

In summary, I argue that consideration set size moderates the interactive relationship between perceived uncertainty and screening strategy on objective accuracy of decisions. More formally,

H_1: *Consideration set size moderates the effect of perceived uncertainty on the screening strategy-decision accuracy relationship. Specifically:*

H_{1a}: When forming smaller consideration sets, consumers with high (low) levels of uncertainty who use inclusion (exclusion) screening strategy are likely to make more objectively accurate decisions than if they use exclusion (inclusion) screening strategy.

H_{1b}: When forming larger consideration sets, consumers with high (low) levels of uncertainty who use exclusion (inclusion) screening strategy are likely to make more objectively accurate decisions than if they use inclusion (exclusion) screening strategy.

In an experimental study, which I discuss next, I test the moderating role of consideration set size on the interactive relationship between perceived uncertainty and screening strategy on objective accuracy of the decision.

3.4: Study

3.4.1: Method

One-hundred and thirty business students participated in a study that followed a 2 (perceived uncertainty: high or low) x 2 (screening strategy: inclusion or exclusion) x 2 (consideration set size: small or large) between-subjects design. In the study, screening strategy and consideration set sizes were experimentally manipulated whereas perceived uncertainty was measured for each participant in the study. Participants received partial course credit in exchange for participating in this study.

Before completing the main experimental task, participants were asked to complete a practice task on the computer. The purpose of this task was to familiarize participants with MouselabWeb, the computer program which was used to create and run this study. MouselabWeb is a process tracing tool that can be used to monitor participants' information acquisition and use while making decisions and has been used in numerous consumer decision making studies (e.g. Payne, Bettman, and Johnson 1993).

The practice task required participants to choose one camera after they looked at descriptions of two cameras that were described on three features. Respondents had to move the mouse over the box to view the information regarding the feature for each camera. The information behind the boxes was visible until the mouse pointer was moved out of the box. The main objective of this task was to allow participants to become familiar with using the mouse to view information and choose an option. Once participants completed this task they were directed to the main task.

For the experimental task, participants engaged in a two-stage choice process: consideration set formation and choice, and were randomly assigned to one of four conditions. They were asked to imagine that they were a purchase officer of a company and were in the process of buying laptops for the company. The supplier had provided them with information regarding twenty-five laptops. Each laptop was described on six different features: screen size, weight, memory, hard drive, processor, and battery life. The descriptions of the twenty-five laptops were created such that there were no clearly superior or inferior laptops.

Insert table 3.1 and table 3.2 about here

The purchase manager's task was to form a smaller subset of laptops for further evaluation. In this study I manipulated consideration set size by asking participants to form either a smaller set of five or a larger set of twenty laptops from the available twenty-five laptops. At this point, screening strategy was manipulated by telling participants to form a smaller subset of

laptops using either inclusion or exclusion screening strategy (adapted from Levin et al. 2001). Using the inclusion screening strategy meant that participants would look at all the laptops, decide which laptops they would seriously consider for buying and include them in their list. Using the exclusion strategy meant that participants would look at all the laptops, decide which laptops they would not seriously consider for buying and exclude them from their list. After participants completed the screening task, they were asked to look at the smaller subset of laptops they had created and either select the one laptop they would like to buy or reject all except the one they would like to buy. For the sake of consistency, participants used the same strategy in both stages of the choice process. There was no time constraint and participants could take as long as they wanted to complete the task.

Participants completed a brief questionnaire after finishing the choice task. They were asked to indicate how important each of the six features was to them in choosing the laptop. Participants rated the perceived importance of each feature on a seven-point scale anchored by 1 = "least important" and 10 = "most important". I computed the variability across the importance ratings of the six features for each participant. Variability in ratings have been linked to subjective uncertainty in the choice process, such that higher the variability, lower the perceived uncertainty. For example, Wyer (1973) argued and showed that there is less uncertainty related to extreme ratings than when the ratings are less polarized because polarized ratings are held with less ambiguity. Further, extreme ratings on the importance scale indicate greater knowledge of preferences and hence lower preference uncertainty. Finally, extreme values are easier to evaluate (Fischer, Luce, and Jia 2000) and greater variability increases discriminability of information and should make trade-offs easier Louviere (2001). Thus, all participants with variability scores above the median value were coded as low perceived uncertainty and those

with variability scores below the median value were coded as high perceived uncertainty. This measure served as the measure of the independent variable – perceived uncertainty, and will be used in further analysis.

The dependent variable was objective accuracy of choice and was computed as:

$$\frac{\text{Weighted Additive Value}_{\text{Choice}} - \text{Weighted Additive Value}_{\text{Worst}}}{\text{Weighted Additive Value}_{\text{Best}} - \text{Weighted Additive Value}_{\text{Worst}}}$$

This measure was adapted from Creyer, Bettman, and Payne (1990). The compensatory weighted additive rule reflects the normative procedure of processing all information and making tradeoffs and has been used as a criterion of decision effectiveness in multiattribute choice (Zakay and Wooler 1984). The measure of accuracy of the decision can be derived by comparing the weighted additive value of the chosen alternative to that of the best and worst alternatives in the set. This measure of relative accuracy is bounded by a value of 1 if the best alternative is chosen and a value of 0 if the worst alternative is selected (Creyer, Bettman, and Payne 1990; Johnson and Payne 1985; Payne, Bettman, and Johnson 1993). The weighted additive value of the alternatives was computed as the sum of product of the importance ratings and the value of each attribute.

3.4.2: Results

The objective accuracy of choice was subjected to a 2 (perceived uncertainty) x 2 (screening strategy) x 2(consideration set size) ANOVA. First, there was a significant main effect of perceived uncertainty on decision accuracy ($M_{\text{high uncertainty}} = .82$ vs. $M_{\text{low uncertainty}} = .90$; $F(1, 122) = 5.58$, $p < .05$). Second, there were no significant main effects of either screening

strategy ($F(1, 122) = .01$, NS) or consideration set size ($F(1, 122) = 1.90$, NS) on objective accuracy of the decision.

There were no significant two-way interactions in the model. First, the interaction between perceived uncertainty and screening strategy was not significant ($F(1, 122) = 1.82$, NS). Second, the interaction between perceived uncertainty and consideration set size was not significant ($F(1, 122) = 1.42$, NS). Third, the interaction between screening strategy and consideration set size also did not reach statistical significance ($F(1, 122) = .10$, NS). This was not surprising, given that H_1 predicted a three-way interaction between perceived uncertainty, screening strategy, and consideration set size. Importantly, there was a significant three-way interaction among perceived uncertainty, screening strategy, and consideration set size, as hypothesized in H_1 ($F(1,122) = 8.34$, $p < .01$). Thus, H_1 was supported.

To explain the three-way interaction, I examined the interaction between perceived uncertainty and screening strategy separately under smaller and larger consideration set conditions. When participants formed smaller consideration sets, the interaction between perceived uncertainty and screening strategy was not significant ($F(1,60) = 1.19$, NS). However, a careful examination of means across conditions shows that as hypothesized, when forming smaller consideration sets, participants with low perceived uncertainty made slightly more accurate decisions using exclusion screening strategy ($M = .92$) as compared to those using inclusion screening strategy ($M = .88$) ($F(1,60) = .32$, NS). On the other hand, for participants with high perceived uncertainty, the objective accuracy of decision was slightly higher for those who used inclusion ($M = .89$) as compared to those who used exclusion screening strategy ($M = .83$) ($F(1,60) = .98$, NS). Thus, although the results did not reach statistical significance, H_{1a} received directional support. The pattern of results was however, reversed for larger

consideration sets with a significant interaction between perceived uncertainty and screening strategy ($F(1,62) = 8.94$, $p < .01$). When forming larger consideration sets, participants with low perceived uncertainty made more accurate decisions using inclusion screening strategy ($M = .96$) as compared to those using exclusion ($M = .82$) ($F(1, 62) = 4.24$, $p < .05$). Participants with high perceived uncertainty on the other hand, made more accurate decisions using exclusion screening strategy ($M = .85$) as compared to those who screened by inclusion ($M = .69$) ($F(1, 62) = 4.70$, $p < .05$). Thus, H_{1b} was fully supported.

Insert table 3.3 and figure 3.2 about here

3.4.3: Discussion

The results of this study are mostly consistent with predictions regarding the moderating roles of perceived uncertainty and consideration set size on the screening strategy-decision accuracy relationship. First, as hypothesized I demonstrated a three-way interaction between perceived uncertainty, screening strategy, and consideration set size on objective decision accuracy. While the results for smaller consideration sets were in the direction as hypothesized, the interactive effect of perceived uncertainty and screening strategy on decision accuracy did not reach statistical significance. However, for larger consideration sets, results completely support the predictions. Thus, this study shows that the number of options in the consideration set from which the consumer chooses from has an impact on the joint effects of perceived uncertainty and screening strategy on decision accuracy.

3.5: General Discussion and Conclusion

This dissertation aimed to address two important issues regarding the use of screening strategies in decision making: the antecedent and consequence of using one screening strategy versus the other. The first essay investigated the role of perceived uncertainty in the choice of screening strategy. Consumers frequently face uncertainty while making choices and the perception of uncertainty has been shown to influence judgment and decision making in a variety of ways including the use of decision heuristics (Tversky and Kahneman 1974), weighting of attributes (Kahn and Meyer 1991), and information search (Jacoby et al. 1994; Mehta, Rajiv, and Srinivasan 2003). In essay one, I demonstrated that perceived uncertainty influences the choice of screening strategy such that consumers with high perceived uncertainty are more likely to choose exclusion screening strategy whereas those with low perceived uncertainty are more likely to choose inclusion screening strategy. Further, this relationship flips when consumers form larger consideration sets. More importantly, the perception of accuracy obtained by the use of screening strategy is the primary driver of the perceived uncertainty – screening strategy relationship. This finding adds to our understanding of how the perception of uncertainty influences an intermediate step in the decision making process – screening.

An important finding in essay one is that the malleability in the choice of screening strategy occurs primarily because consumers want to make good decisions. This finding is in line with the idea that making accurate decisions is an important motive for decision makers (Payne, Bettman, and Johnson 1993) and screening enhances the chances of making a good decision by allowing good options to be considered while preventing bad alternatives from being considered

for choice (Beach 1990; 1993). Thus, it is important to understand how accurate are the decisions obtained by the use of screening strategies.

Essay two seeks to address the issue of decision accuracy of screening strategies, given the perceived uncertainty consumers experience during the choice process. There is limited research that has examined the impact of screening strategies on the accuracy of final choice (e.g. Heller, Levin, and Goransson 2002). Further, results have been inconclusive for the differential impact of screening strategies on final choice. This research examines the role of screening strategies on the objective accuracy of choice and also explicates the interactive roles of perceived uncertainty and consideration set size on the screening strategy – decision accuracy relationship. This dissertation is consistent with the view that screening enhances the potential of a good choice (Beach 1990, 1993; Beach and Mitchell 1990). Additionally, consumers choose the strategy that they perceive will lead to good choices. Thus, decision quality should relate to how the process of screening can improve the quality of choice, especially given the perception of uncertainty. In essay two, I show that screening improves the accuracy of final choice and the process is moderated by perceived uncertainty and consideration set size. Thus, screening can greatly enhance the quality of decisions through the process of information search and learning that occurs while choosing and applying the right screening strategy.

One important aspect of this dissertation is that it has utilized a variety of methodologies (laboratory experiment and verbal protocol analysis), samples (students and adult contestants in the game show), decision making contexts (video games, apartment renal, TV game show, laptop purchase), experimental set up (scenario-based and actual choice context), and experimental designs (within-subject and between-subjects) to help answer the research questions.

Triangulation of results using various methods and sources of data add robustness to the inferences made herein.

This dissertation contributes to existing literature in screening strategies and decision making. While essay one focused on the antecedents of choosing a screening strategy, essay two examined the consequence of using the screening strategy. This research furthers our current understanding of the factors that influence the choice of screening strategies by demonstrating the role of perceived uncertainty and consideration set size in the choice of screening strategy. This research concurs that there is no "default" screening strategy for consumers, but rather the choice of screening strategy itself is adaptive in nature as is most decision making (Payne, Bettman and Johnson 1993). Also, this dissertation seeks to further our understanding regarding the consequence of using the screening strategies. Decision accuracy is an important outcome of the decision making process and has huge public policy and consumer welfare implications. Most importantly this dissertation shows that perceived uncertainty and consideration set size are both important factors impacting the perception of accuracy as well as the accuracy of final choice. However, their effect is in opposite directions. Essay one showed that consumers choose a screening strategy in the anticipation of increasing accuracy of their decision. However, as shown in essay two, the objective accuracy of decisions may not correspond to the perceptions of accuracy that consumers have. Thus, consumers could make suboptimal choices through the use of wrong screening strategy. Such suboptimal choices can have very seriously negative and long lasting consequences in various situations like medical decision making, financial and investment decision making, partner selection etc. that are rife with uncertainty.

This dissertation highlights the important distinction between anticipation of accuracy and experienced accuracy (Kleinmuntz and Schkade 1993). For example, Fennema and

Kleinmuntz (1995) showed that decision makers have limited ability to anticipate the effort and accuracy consequences of their decisions. They demonstrated that participants were worse off anticipating accuracy than they were at anticipating effort related to the strategies and that they only insufficiently updated their accuracy anticipations after several trials and explicit feedback. This raises questions whether the suboptimal choices result from "overconfidence or underconfidence traps" (Lichtenstein, Fischhoff, and Phillips 1982). Further, it is also important to understand how decision makers could be nudged to choose the right screening strategy and make good decisions. Future research must investigate these issues in more detail. While the focus of analysis in essay two of this dissertation is the objective decision accuracy, future research also needs to investigate the process during choice to understand the underlying mechanisms like information search and the effect of search strategies that renders choices made with one screening strategy suboptimal as compared to the other.

In summary, this dissertation examines the antecedents and consequences of screening strategies and highlights the role of perceived uncertainty on screening strategy selection as well as on the outcome of screening – decision accuracy.

Table 3.1: Attributes Used to Describe Alternatives in the Stimuli (Laptops)

Attributes / Levels	Level 1	Level 2	Level 3
Screen Size	15.4 inches	14.1 inches	13.3 inches
Weight	4.5 lb.	5.0 lb.	5.4 lb.
Memory	4GB	3GB	2GB
Hard drive	250GB	200GB	160GB
Processor	2.4 GHz	2.0 GHz	1.83GHz
Battery Life	4.0hr – 5.7hr	3.9hr – 5.5hr	3.0hr – 4.5hr

Table 3.2: Description of Alternatives used as Stimuli (25 Laptops)

Alternative	Screen Size	Weight	Memory	Hard Drive	Processor	Battery Life
Brand 1	15.4”	5.0 lbs	2GB	250GB	2.0 Ghz	3.0hr -4.5hr
Brand 2	14.1”	5.4 lbs	4GB	200GB	1.83 Ghz	4.0hr -5.7hr
Brand 3	13.3”	4.5 lbs	3GB	160GB	2.4 Ghz	3.9hr -5.5hr
Brand 4	13.3”	5.0 lbs	4GB	160GB	2.0 Ghz	4.0hr -5.7hr
Brand 5	14.1”	4.5 lbs	2GB	200GB	2.4 Ghz	3.0hr -4.5hr
Brand 6	15.4”	5.4 lbs	3GB	250GB	1.83 Ghz	3.9hr -5.5hr
Brand 7	15.4”	5.0 lbs	2GB	200GB	1.83 Ghz	4.0hr -5.7hr
Brand 8	14.1”	5.4 lbs	4GB	160GB	2.4 Ghz	3.9hr -5.5hr
Brand 9	13.3”	4.5 lbs	3GB	160GB	2.0 Ghz	4.0hr -5.7hr
Brand 10	13.3”	5.0 lbs	4GB	200GB	2.4 Ghz	3.0hr -4.5hr
Brand 11	14.1”	4.5 lbs	2GB	250GB	1.83 Ghz	3.9hr -5.5hr
Brand 12	15.4”	5.4 lbs	3GB	250GB	2.0 Ghz	3.0hr -4.5hr
Brand 13	15.4”	5.0 lbs	2GB	160GB	2.4 Ghz	3.9hr -5.5hr
Brand 14	14.1”	5.4 lbs	4GB	160GB	2.0 Ghz	4.0hr -5.7hr
Brand 15	13.3”	4.5 lbs	3GB	200GB	2.4 Ghz	3.0hr -4.5hr
Brand 16	13.3”	5.0 lbs	4GB	250GB	1.83 Ghz	3.9hr -5.5hr
Brand 17	14.1”	4.5 lbs	2GB	250GB	2.0 Ghz	3.0hr -4.5hr
Brand 18	15.4”	5.4 lbs	3GB	200GB	1.83 Ghz	4.0hr -5.7hr
Brand 19	15.4”	5.0 lbs	2GB	160GB	2.0 Ghz	4.0hr -5.7hr
Brand 20	14.1”	5.4 lbs	4GB	200GB	2.4 Ghz	3.0hr -4.5hr
Brand 21	13.3”	4.5 lbs	3GB	250GB	1.83 Ghz	3.9hr -5.5hr
Brand 22	13.3”	5.0 lbs	4GB	250GB	2.0 Ghz	3.0hr -4.5hr
Brand 23	14.1”	4.5 lbs	2GB	200GB	1.83 Ghz	4.0hr -5.7hr
Brand 24	15.4”	5.4 lbs	3GB	160GB	2.4 Ghz	3.9hr -5.5hr
Brand 25	15.4”	5.0 lbs	2GB	200GB	2.4 Ghz	3.0hr -4.5hr

Table 3.3: Means of Objective Accuracy of Decision

Consideration Set Size	Perceived Uncertainty	Screening Strategy	Objective Accuracy
Small	Low	Inclusion	.88
			(.20)
Small	Low	Exclusion	.92
			(.21)
Small	High	Inclusion	.89
			(.13)
Small	High	Exclusion	.83
			(.25)
Large	Low	Inclusion	.96
			(.06)
Large	Low	Exclusion	.82
			(.21)
Large	High	Inclusion	.69
			(.30)
Large	High	Exclusion	.85
			(.17)

Note: Standard deviations are provided in parentheses.

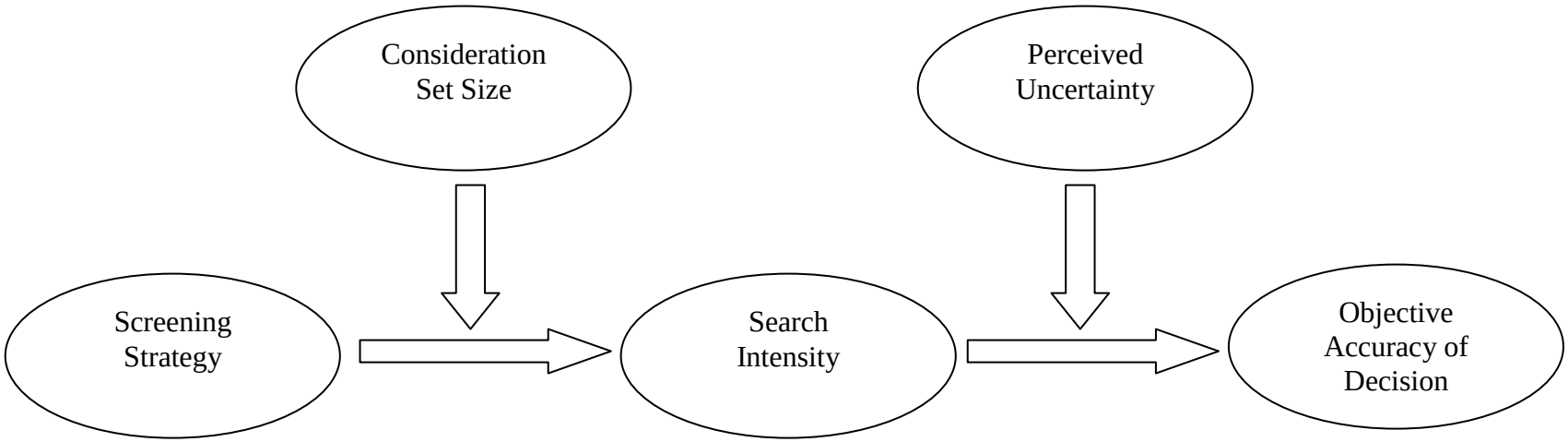
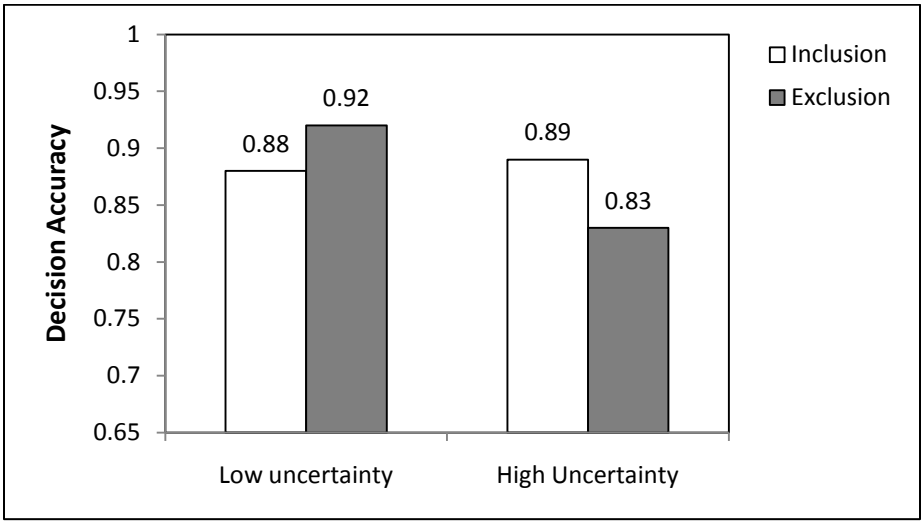


Figure 3.1: Proposed Model for the Moderating Roles of Perceived Uncertainty and Consideration Set Size on the Screening Strategy – Decision Accuracy Relationship

Panel A: Small Consideration Sets



Panel B: Large Consideration Sets

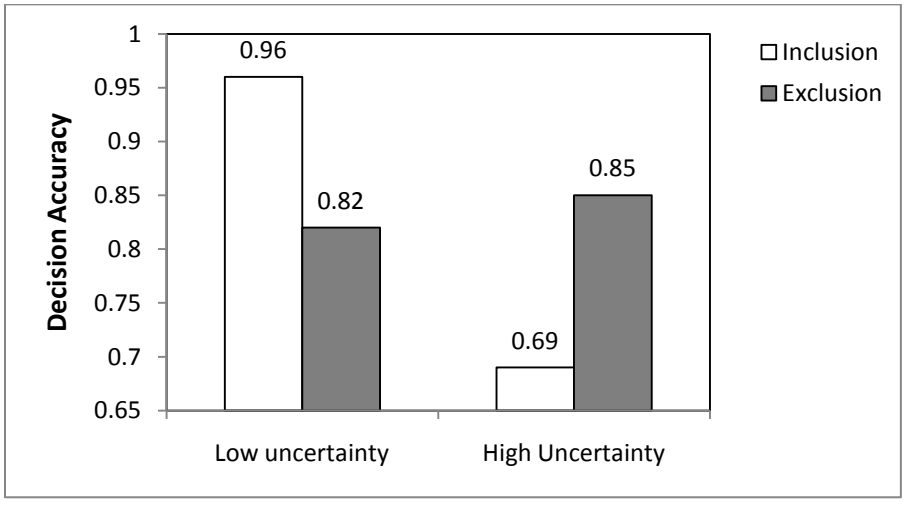


Figure 3.2: The Moderating Effects of Perceived Uncertainty and Consideration Set Size on the Screening Strategy – Decision Accuracy Relationship

APPENDIX: IRB HUMAN SUBJECTS PERMISSION LETTER

University of Central Florida

Office of Research & Commercialization

September 1, 2006

Xin He, Ph.D. &
Rajani Ganesh Pillai
University of Central Florida
Department of Marketing
BA2 308L
Orlando, FL 32816-1400

Dear Dr. He & Mrs. Pillai:

The University of Central Florida's Institutional Review Board (IRB) received your protocol IRB #06-3736 entitled **"Consumers' Choice of Screening Strategies in Forming Consideration Set."** The IRB Chair reviewed the study on 8/31/2006 and did not have any concerns with the proposed project. The Chair has indicated that under federal regulations (Category #2, research involving the use of educational tests, survey or interview procedures, or the observation of public behavior, so long as confidentiality is maintained) this research is **exempt** from further review by our IRB, so an approval is not applicable and a renewal within one year is not required.

Please accept our best wishes for the success of your endeavors. Should you have any questions, please do not hesitate to call me at 407-823-2901.

Cordially,

Joanne Muratori

Joanne Muratori
UCF IRB Coordinator
(IRB00001138, FWA00000351, Exp. 5/13/07)

Copies: IRB File

JM/jt

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